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THE

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TREATMENT OF SENSITIVE DENTINE.

BY EDWIN DAY DOWNS, D. D. S., OWEGO, N. Y.

Read before the Eighth District Dental Society.

There is no denying that dentist and patient alike are looking for the millenium of painless dentistry, but I do believe that the suffering in the excavation of cavities preparatory to filling is greatly exaggerated, and has its origin in a dread of visits to us, beginning with childhood, fostered by inconsiderate remarks of the adults in the family about the awful morning they have spent with us, and by silly jokes perpetrated by ourselves, as well as the laymen, concerning the horrors of our work.

Dr. Barrett has insisted that normal dentine is not sensitive, and I am inclined to think this will yet be proven. Then the degree of abnormality will undoubtedly indicate the treatment, as I think it should now.

Assuming that dentine, when sensitive, is abnormal, experience would indicate that many cases are restored to a normal condition by the insertion of a filling. Others remain sensitive some days afterwards, but if guarded from shocks of extreme heat or cold become healthy. Yet others go from bad to worse, until a dose of arsenic and a root filling follow.

Methods, medicaments and various preparations, have been offered us for the relief of this condition; many of them I have tried, until now I am prepared to assert my utter disbelief in the efficacy of most of them, and the desirability of something better. Further, I would say that most cases too sensitive to prepare without the use of these agents, are too sensitive to admit of permanent fillings.

It is amazing, the persistency with which the same old remedies crop up in different combinations, and how patiently we listen while some one tells how Holy Thunder, or Curative Lightning, relieves nine cases out of ten in his practice; and when the journal containing these learned discussions falls into the hands of the young practitioner, and he realizes the childlike faith of the elders, is it strange that the suave and oily tongued agent has but little trouble in persuading him that a few dollars invested in his preparation will bring unlimited wealth and the gratitude of suffering humanity?

Is it to be wondered at, when respectable practitioners are willing to stand with watch in hand waiting for the effects of a quack medicament, assuring the patient that this is a sure thing, recommended by a noted man at the last meeting he attended, that the same patient should believe that the charlatan around the corner may have something a little better?

The application of intense cold by various agents has its advocates, and I have made some use of it, but in only a few cases, for with a keen appreciation of the sensitiveness of the dental pulp to thermal changes, I have feared the consequences.

I am well aware that men of far more ability in all the lines of our vocation than I can ever hope to possess, tell us that clinically they are safe and effective agents.

I am also aware that scientific reasons have often followed, rather than preceded clinical experience. Yet how much there has been to make us question the truth of what we see, or think we see, clinically.

We were a long time finding out that disaster was likely to follow from cutting V-shaped spaces.

For how many years did we go on capping exposed pulps with oxychloride of zinc, and protesting that 80 or 90 per cent. of our cases were successful? How many to-day are following such a course? Yet look back over the literature of that period, and see how strong were the assertions, how apparently careful the observations and fair the tests, to show that those pulps lived and covered themselves with secondary dentine. Do we believe in this to-day?

And then came copper amalgam? How could we doubt this, how refuse it, when it had been used for so many years over the sea? My enthusiasm, followed by my discomfiture, is too recent for me to speak without pain of this experience. You all know how many other things I could add to this list, and if my experience is to be relied upon, other remedies of more recent date are bound to go the way of all flesh.

We often wonder at the readiness with which the lay mind runs after quacks and nostrums. Are we very much better? Is not the same faith in us?

I know you will tell me that the things mentioned were condemned clinically, but for what a long time they raged first. They were founded on empiricism, upheld by experience, and only condemned after untold harm had been done.

Until our science is broader, I am willing to admit that clinical experience must continue to be our guide. But we must question it, we must examine it, we must doubt it.

Perhaps experience does not so often mislead us as our desire to be originators, or authorities. It is not truth we seek, but fame, or applause.

Many and many a time have I gathered, with others, about a man, pencil and note-book in hand, to jot down directions for safe guidance over a rugged path, only at last to be caught in some pitfall or entrapped in some snare.

Of late we have been listening to long discussions on hypnotic suggestion for the relief of the condition under discussion, and in this I have faith, firmly believing that the seeming benefits of many remedies owe their influence to the hypnotic suggestion contained in their application, and of the assurance of the operator that benefits are to be expected. But I do most emphatically question the desirability of dentists posing before the public as hypnotists, in the present state of public superstition in regard to this subject. In the reported discussion of hypnotism at Chicago, one gentleman said to another in effect, that by gentleness and kindness he had practically the same results, and in that remark lies a wealth of suggestions.

The treatment of sensitive dentine should begin in the reception room. The patient should be received with kindness, but not the exaggerated kindness that suggests some awful thing about to happen, and which thus excites apprehension.

The professional manner should be studiously unprofessional. When the hour appointed for work arrives the dentist should strive to be ready, so that waiting in the reception room may be avoided. He should not be sitting there when his patient arrives, but should be ready to come out immediately, looking clean, alert and cool, and glad to see the patient. A few pleasant words while wraps are laid aside, and free from hurry he invites them to his operating room, where absolutely no instruments should be visible, to excite imagination. The dental engine itself must be as little on exhibition as possible.

While he attracts the attention of the patient, a deft, unobtrusive assistant should rapidly, but quietly, make the necessary arrangements for commencing work. If he shall have kept himself under control, if he will continue to do so throughout the operation, sinking the shop out of sight and using all the kindness possible, he will find that many otherwise difficult cases require no other treatment; and this indicates the kind of hypnotic suggestion in which I believe.

What I have said, what I have to say in regard to treatment, probably has been said, in one form or another, a great many times, but I would suggest, first of all, a kind and gentle manner, and sharp, quick-cutting instruments.

Next, the exclusion of moisture, and the dessication of the tooth to as great an extent as can be obtained without pain. When these means fail and extreme sensitiveness remains, I believe that permanent fillings, or thorough preparation, is contra-indicated.

As to the manner, if kindness and gentleness are not natural, they must and can be cultivated. As to the instruments, that depends upon our liberality towards those who commit themselves to our care. As to the exclusion of moisture, that is solved by the rubber dam. As to the deprivation of the tooth of the degree of moisture that can be easily borne, that may be accomplished by bibulous paper, alcohol and hot air, preferably compressed air heated.

I believe that these means,—and I would lay great stress upon the manner of the dentist, and the condition of his instruments,—will accomplish all that is desirable in the majority of cases. When all these fail, I would resort to temporary work, the choice of materials being decided by the indications of the case.

I have often found that cessation of work, and the sealing for a few days with one of the temporary stoppings, consisting of gutta-percha and wax, is all that is necessary. When airing my views on this subject once, I was called down quite sharply, with the assertion that gutta-percha did not relieve sensitiveness, but that on the contrary it often increases it.

It is not pretended that it relieves, but by the efficient exclusion of the fluids of the mouth and the prevention of thermal changes, it allows nature, the greatest of all healers, to restore the dentine to its normal condition. As to its causing irritation, I do not believe it. Oftener, though, I prefer to use oxy-sulphate of zinc fillings, and occasionally oxy-chloride, or oxy-phosphate. I have painted with nitrate of silver and covered with gutta-percha, with, I thought, good results. A favorite temporary dressing is the addition of a little oil of cinnamon and hydronaphthol to the liquid of the oxy-sulphate preparation, mixing with the powder to a paste, and covering this with the usual oxy-sulphate filling.

Of course, this is all empirical, but it is safe empiricism. What I am crying against is the bringing in contact with sensitive dentine those agents which theoretically might cause irritation of the pulp, so long as the same condition may be combated, as I believe it can, in an all-sufficient degree by the use of simple and known safe means. And does not the use of such powerful agents as are often recommended, mislead by enabling us to bring in contact with extremely sensitive teeth fillings of high conductivity, and when the immediate effect of the remedy is gone, is not recurrence liable through thermal changes?

I know that I am liable to be met here with the assertion that such treatment as I suggest is not conducive to economy of time. But I do not want it understood that every time a patient shows pain I send them home with a temporary filling. On the contrary, if it had not been for the exceptional cases, I should have put myself on record as believing that a kindly manner and sharp instruments would meet all indications. I will venture to say that no surgeon would think of giving an anæsthetic for an operation involving no more pain than the excavation of ninety per cent. of the teeth we have to fill. I was greatly minded to make the percentage larger. In fact, I believe nervous shrinking from our work, causes exaggeration of the pain actually felt, and this arises from various causes. It is natural to close one's teeth tightly together when pain is inflicted. The nature of our work prevents this, and consequently the will power is demoralized, and the patient becomes fearful and childish. The teeth convey sound so readily that the whir and hum of our machinery produces the same effect.

We often hear of the difficulty of preparation of shallow cavities on the buccal and labial faces of the teeth, when extreme sensitiveness is met, and the cold spray is greatly lauded for these cases. So far as the buccal faces of the molars are concerned, in such cavities I think the nitrate of silver treatment is usually the best. If decay is not retarded, the sensitiveness at least seems to be so much lessened that in time fillings may be made with comparative comfort.

The labial faces of the anterior teeth, where of course this treatment would be objectionable on account of color, are so accessible and require so little time in their preparation with proper instruments, that it seems to me they require no other treatment.

For these teeth I aim to have in my case engine burs that have never been used; but a few moments work are then required to prepare such cavities for filling, and with such instruments pain is reduced to the minimum.

In remarks to patients, I neither belittle nor exaggerate the pain. Show appreciation of the aid they are giving towards the conservation of their teeth. Do not give them long appointments, but send them out when yet fresh enough to look with interest into the shop windows, and I will venture to say you will have little reason to make practical application of the various preparations offered.

So far, I have been asserting that in my experience there was little reason why we should be searching for so-called obtundents for sensitive dentine for immediate filling, and at the same time some of my remarks have been intended, whether clear or not, to show the encouragement that is given charlatans by teaching our patients to demand such preparations.

If you differ from me, if you feel that such pain must be allayed, that it is more than humanity should be called upon to bear, then place that remedy in the cavity which you believe will be harmless and efficacious, but do not let your patient know that you have made an application for such a purpose. If it has a specific action that will produce the result desired, it does not need hypnotic suggestion, or Christian science, or mind cure to aid it.

THE STUDY OF ANATOMY.

BY HARRY B. HUVER; UNDERGRADUATE.

Read Before the Barrettonian Society of the Dental Department of the University of Buffalo.

Nearly all students of dentistry and medicine become discouraged when they first commence the study of anatomy. The technical terms used are new, and unless the student is well versed in Latin and Greek, they sound very strange and meaningless. To attempt to name or commit to memory such a mass of terms as apply to the different bones, with their several parts, the almost innumerable muscles, the seemingly endless mass of arteries, veins, nerves, lymphatics, fascia, tendons and cartilages, to say nothing of the great number of special organs, glands, viscera, etc., seems a hopeless task.

When the professor begins to lecture upon some special bone, with all its surfaces, grooves, fossæ, tubercles, foramens, articulations, tuberosities, and points of attachment of muscles, to each of which is given a name entirely new and outlandish in sound, seemingly without meaning, the student is appalled at the prospect of ever becoming familiar with them. If he is to depend upon the unaided memory, he is likely soon to find himself in a complete state of confusion. The only way through which all of these terms can be mastered, is by reducing them to some kind of a system.

The student must pursue his studies in some regular manner, through which he can first become familiar with certain leading terms. A great aid to this he will find in making a note of any special word, operation, or term with which he is not familiar, and looking it up in the dictionary —a book far too much neglected by most of us students.

There will be some general term which he will find applied to, or in some way connected with, most of the muscles, nerves, and blood vessels of any particular region. The most of these terms are from the Latin, but as many of them have been adopted into the English, with a fair English education he will understand their meaning, and apply them intelligently. If, for instance, he is studying the jaws, he very soon learns that their technical name is maxillæ; that, of the two, the upper will be the superior; the lower, the inferior. These he can then describe as the superior and inferior maxilla. If he meets the term maxillary fossa, upon reference to his dictionary he finds that fossa means a depression; he then immediately implies that it is a depression on one of the maxillæ. The term oral refers to the mouth, labial to the lips, lingual to the tongue, buccal to the cheek, nasal to the nose, and orbital to the eye, and the most of these we meet every day in our dental anatomy.

Suppose the student meets the terms depressor, or levator labii inferioris. Depressor, he finds, means to pull down, and levator to raise up, as a lever. Then, with the knowledge already gained, he immediately knows that they are the muscles which depress and raise the lower lip. This only leaves for him to commit to memory their relation to other muscles, and their exact attachment.

Again, orbicular means a circle, or anything of a circular shape; hence, the orbicularis oris muscle must be one which surrounds the mouth. Palpebra refers to the eyebrows, and so the orbicularis palpebrarum must be the muscle which surrounds the eye.

If the student will try to make himself acquainted with the bones, they will aid him, to a great extent, in the location of names and terms in many other parts of the anatomy. They are also the landmarks from which most of the measurements are made, as the gabella, a projection between the superciliary ridges of the frontal bone, is used for the principal point to begin the measurements for trepanning the skull. Many internal organs are also located by these bony markings.

The bones are often named after something which they resemble, or the position in which they are placed, of which we have good examples in the cuboid bones, from their resemblance to a cube. Then there is the exact opposite in the os-innominatum, or nameless bone, from its non-resemblance to any particular thing. There is also the palate bone, meaning a roof. The ulna is characterized by its forming the elbow. The radius is a spoke. One of these bones alone forms almost the whole of the articulation to the arm, and the other to the carpal bones. By pronouncing them, we see that ulna sounds not unlike elbow, and radius like wrist, and thus these can be easily remembered. The atlas also receives its name because it is the support of the head, or globe, and in connection with it is the axis, because it has a process upon which the globe or head rotates.

The muscles are often named in the same way, but more frequently they take the name from the bones to which they are attached, the sterno-cleido-mastoid being a good example; the sterno-cleido from its joint attachment to the sternum and clavicle, and mastoid from the mastoid process. As the origin is usually mentioned first, we would understand it to be a muscle starting from the sternum and clavicle, passing upwards and backwards, to be inserted in the mastoid portion of the temporal bone, and all this may be learned from the name itself.

Two good examples of bones giving names to muscles may be found in the hyoid bone, and the styloid process of the temporal, a whole series of muscles being named from them. They are also often named from the region in which they occur, as the externus-obliquus-abdominis, and internus-obliquus-abdominis. Externus and obliquus are general terms, meaning outer, in an oblique direction, while abdominis is the abdomen. In the same way the blood vessels are often named, as the brachial in the arm, the radial because it runs along beside the radius, and the maxillary arteries, which supply the maxillary bones and the teeth of the upper jaw, with its branch, the inferior dental, to the lower jaw. There are also those which supply certain viscera, as the renal arteries to the kidneys, and bronchial to the tissues of the lungs.

The nerves follow the same order as most of the rest. They are first divided into their main divisions, the cranial to the cranium, the spinal to the spine and its appendages, the upper and lower limbs.

The divisions of the cranium in every instance are named from either their function or location. A knowledge of physiology and embryology are often great aids in the study of anatomy, because knowing the function of an organ will often give an insight into its structure and name. Embryology is especially interesting, because we see so many changes in the production of the body that it excites a curiosity on our part to learn what the permanent structure may be, as in the change of the first visceral cleft to the eustachian tube, while the change of circulation from the single heart to the double, causes us to wonder what has become of the foramen ovale, or connection between them.

The student, then, who desires to learn anatomy, and who wishes that knowledge when obtained to remain fixed in his mind so that it will not be forgotten, must first of all become familiar with many of these principal terms, with their meaning. Having conquered these, they make for him a system of memory helps, which it is almost impossible to progress without.

If the dentist were to visit the dental depot for supplies, knowing that he wanted some excavators, some teeth, some pluggers, some rubber, an articulator, some gutta-percha, some piano wire, some floss silk, some gold and some cement, and put them down in his memory all jumbled together, as read, he would certainly forget some of them; but if he arranged them in some concise manner, he would have no difficulty. For instance, in his operating room he knows that he needs certain indispensable things, which, when arranged systematically, would be; first, materials for filling teeth, as gold, cement, and gutta-percha; second, the instruments preparatory to them, as excavators, rubber dam and floss silk, and those for their insertion, as pluggers.

In his laboratory he knows that he has in hand a regulating case, requiring piano wire; some artificial dentures to make, and for these he requires teeth, an articulator, some rubber, and flask bolts. Arranged thus in his mind, he would have no difficulty in making his purchase.

Some system of this kind, some regular arrangement of the different items of study, will enable the student to fix them all in his memory without danger of crowding one another out. If he will so train his mind, so discipline it that it will observe this regularity, and keep each system of gained knowledge by itself, the study of anatomy will lose many of its terrors.

All the junior students of this year know how much easier anatomy is this year than last. That is because they are familiar with these terms, and have learned their general signification, and because their minds are better disciplined, and hence will retain the information much better. If they have proceeded somewhat in the manner which I have sketched out, they will have made much better progress, and will be more sure of their knowledge than if they had gone to work in a haphazard way, without any regular system of study.

DENTITION A CAUSE OF DISEASE.

BY DR. C. S. BUTLER, BUFFALO, N. Y.

Read before the Union Dental Convention, held in Rochester, N. Y., October, 1893.

Dentition, although a purely physiological process, is nevertheless almost always attended with some degree of suffering. For this reason, teething has been considered by the medical profession, from the days of Hippocrates, Galen, and Celsus, a potent factor in the cause of disease; and, while there seems to be less unanimity on the subject now than formerly, yet the etiology of dentition still holds a strong position within the domain of physical diagnosis, and is receiving more than ordinary consideration at the hands of writers upon infantile pathology.

Down to within a very few years, teething was almost universally regarded, both by the medical profession and laity, as causing nearly, if not quite, all the diseases of infancy, and there are still many able writers and practitioners holding this view; while others, equally able, believe the diseases of this period coincident with, and not dependent in any sense upon, the teething process. They tell us that, with the great advance in the past few years in the knowledge of the diseases of infancy, "teething has been pushed into the background, until it now occupies a very insignificant position in the etiology of disease."

Midway between these two extremes there is to be found a large, and, we believe, constantly increasing, class of equally able writers and practitioners who, while admitting that heretofore teething has been held accountable for by far too many infantile diseases, believe, nevertheless, that there are many directly traceable to, or caused by, painful evolutions of the teeth. To this middle class we, as dentists, rightfully belong; for the part which dentition bears in the causation of disease is not yet fully determined, but opens up a field for investigation and study, which if energetically pursued, the results, I doubt not, will enable us the more worthily to maintain the position so universally accorded us among the learned professions of the world.

To the progressive mind, fields proper for investigation and research are constantly opening, and it is the boast of our profession that so many of its members are reaching out into hitherto unexplored fields within the domain of pathological science.

Dentition a cause of disease is, therefore, a subject especially within our sphere, and to him who shall bestow upon it study sufficient to clear away the doubts and mysteries now surrounding it will come the consciousness of having removed one of the greatest dangers threatening the infant life, by making possible a correct diagnosis and treatment of many infantile diseases now but imperfectly understood.

At present the best authorities on dental pathology are at variance on this subject. Those who charge teething with being the cause of the most varied disorders of infancy, neglect or entirely disregard serious affections, both in contiguous and remote organs; while those holding the opinion that dentition, being a purely physiological process, cannot, therefore, give rise to any morbid phenomena, err equally, though in the opposite direction.

An early recognition and appreciation of the fact "that difficult and painful evolution of the teeth frequently causes derangements in the functions of organs, even those remote from the mouth, and sometimes produce in them a real pathological state,"* will lead not infrequently to a more intelligent treatment of grave and serious affections. In estimating the amount of influence dentition may have in the causation of disease, a clear understanding of the changes taking place in the teeth and adjacent parts is required,—and not in these only, for there are also changes going on at the same time in other and more remote organs, the influences of which have a marked bearing upon the teething process.

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*J. Lewis Smith, M. D., "Diseases of Infancy and Childhood," page 571.

The infant body is not an adult organism in miniature. All its organs are incompletely developed, but not uniformally so; while the whole system is characterized by peculiarity of structure and function. The preponderence of the spinal nervous system is especially marked, and it is owing to this fact that the sympathy of distant organs with one another is much greater in infancy than in adult life, and produces in them a special tendency to reflex nervous disturbances.

It is a matter of common observation that the least functional disorders may excite serious and profound disturbances in infancy, the influence of which would not be felt in childhood or adult life; as, for example, a slight irritation of the larynx may produce spasmodic coughing, a little undigested food cause convulsions, while almost any excitement results in vomiting. "Thus a mere interference with the normal functions of the infant may, and often does, result in consequences out of all seeming proportion to the gravity of the cause."

The teeth belong not to the osseous but to the dermal system. Their relations to the nervous system are, therefore, especially indicated, and are, in early infancy, made up largely of neurotic tissue. They take their rise in the epithelial membrane covering the maxilla, where, as early as the fourteenth week of intra-uterine life, preparations for the formation of the deciduous teeth are discernible in the development on the edge of the maxilla of a closed follicle, from the floor of which a papilla projects. These papillary structures are highly vascular, and are filled with numerous nerves and capillaries.

From the seventeeth week of fœtal life on, they begin to assume the character of the future teeth by the deposition of the lime-salts into the previously prepared tissues, till about the fortieth week, or at birth, when the incisor crowns are fully formed and the cuspids and molars well under way. At or about the twentieth week of fœtal life, preparations are also making for the development of the four first permanent molars, by the same process of budding from the underlying embryonic tissue, as in the case of the deciduous teeth. Following closely upon this is also the inflection giving rise to the germs of the twenty anterior permanent teeth, and from this time on they are passing through the several stages preparatory to receiving the salts of lime; so that at birth the infant has not only the twenty deciduous teeth well advanced towards calcification, but has also the germs of twenty-four permanent teeth, in twelve of which calcification begins during the first year.

Bearing in mind the fact that the development of the dentine and enamel is preceded by the formation of the soft tissues or tooth-germ, equal in size and of the same form as the future tooth-crown, and that these soft tissues are vascular and filled with nerves and capillaries, and that calcification by the dentine is from the periphery of the papilla inward till the germ remains a mere bundle of nerve-fibres,—the pulp of the fully developed tooth,—while the gradually elongating crown presses against the enamel-organ and roof of the dental sac until they disappear together with the superimposed gum-tissue; bearing in mind, I say, these delicate processes of nature, may they not upon the slightest functional derangement take on true pathological conditions? I think this question may be answered in the affirmative, and certainly it may if the accumulated experience of nearly all the best known writers upon infantile pathology is to be given the weight it is seemingly entitled to.

It should be remembered also that the period during which the teeth and surrounding tissues are undergoing the changes is one of augmented nervo-vascular action, and the whole organism of the child is consequently more liable to a disturbance of harmony. Its nervous system has not yet acquired the stability and equilibrium of the youth, but is extremely susceptible to impressions, while the brain, the stomach, and intestinal tract, the circulatory and respiratory apparatus show an increased though varying liability to irritation.

This is shown by the marked manifestations of disturbed functions that are produced by what in the more mature system would be unnoticed. It is shown also in increasing the nervous impressibility of the child, and thus lessening its powers to resist perturbing influences; for, as Dr. J. W. White, in his article on "Diseases Incident to the First Dentition," in the *American System of Dentistry*, truly says, "The natural vigor, the state of the general health, and the conditions by which the child is surrounded exert a powerful influence in preventing or promoting aberrations in dental evolutions."

What may be termed normal dentition depends upon an absolute accord between the processes of growth and absorption, as well of the papilla as of the membranes covering the developing tooth. The gradual lengthening of the roots causes the teeth to rise in their sockets, thereby producing constant pressure upon the overlying tissues, which, becoming thinner and thinner, finally allow the teeth to escape.

When from any cause there is a want of accord between the propulsive and the resistive forces, they are in antagonism; or when from any cause the advance of the tooth is more rapid than the removal by absorption of the superimposed tissues, they become an obstacle, and the tooth acts as a mechanical irritant. Congestion, induration, tumefaction, and ulceration are the result.

By many there is thought to be some force, in addition to or independent of the elongation of the root, in impelling the tooth-crown forward.

Speaking on this point, Tomes in his "Dental Anatomy," page 191, says, "Very strong objections have been brought forward clearly proving that this cause (elongation of the root) is quite inadequate to explain all that may be observed.

"In the first place, teeth with very stunted roots, or practically no roots at all, are often erupted. Again the tooth may have the whole length of its roots completed, and yet remain buried in the jaw through half a life-time and then erupt. Moreover, when a healthy normal tooth is erupted, the distance traveled by the crown materially exceeds the amount of addition to the length of its roots which has taken place during the same time." Speaking upon this same subject in his "Comparative Anatomy," Mr. Tomes further says, "The tooth of a crocodile moves upward, tooth-pulp and all, obviously impelled by something different from mere elongation, and my own researches upon the development and succession of reptilian teeth clearly show that a force quite independent of increase in length shifts their position and erupts successive teeth. But what the exact nature of the impulse may be is an unsolved riddle; the explanations which I have read bring to my mind less satisfaction than the admission that we don't know."

Here, then, is a force sufficient oftentimes to propel teeth long distances from their normal position, which the most intelligent investigators admit they do not understand. Is it safe to assume that a force so powerful and so persistent, even though physiological, is incapable of producing profound and serious disturbances?

With some children tooth after tooth appears without the slightest premonitory symptoms. The period of dentition comes and goes, attracting attention only when a new tooth is discovered, but as Tomes again remarks, "Instances of teething such as these are comparatively rare, and can only occur in children who are and have been perfectly healthy, which involves a series of conditions our artificial state of living does not tend to bring about, even if it can allow."

It is sometimes urged, by those claiming dentition has little or no influence in the causation of disease, that teething cannot produce special discomfort because of the comparative insensibility of gum-tissue. Yet it is a well-known clinical fact that notwithstanding its comparative insensibility in normality, in a state of inflammation gum-tissue becomes one of the most sensitive of the whole system. But it is obviously unfair to limit the influences of teething to the tissues by which they are immediately surrounded. "The period of dentition, like that of puberty, constitutes one of the great epochs of life; it is a time when great changes are going on in the whole organism, when the animal machine being in a state of increased activity, its parts are more than usually apt to get out of order. * * *

"The error which has been committed with reference to this matter, not merely by the laity, but by members of the medical profession also, consists not in overstating the hazard of the time when changes so important are being accomplished, but in regarding only one of the manifestations—though that indeed not the striking one—of the many important ends which nature is then laboring to bring about. The epoch of dentition is to be looked upon just in the same way as that in which we regard puberty. Constitutional disturbances are more common and serious diseases more frequent at these times than at any other; but their causes lie deeper than the tooth which irritates the gum it has not yet pierced, in the one case, or than the womb which has not yet yielded the due discharge of blood, in the other."*

The complex association of tissues immediately surrounding the teeth, their diversified physiological functions and significant systemic relations, suggest pathological possibilities to be found nowhere else in the human body.

By means of the lining mucous membrane of the mouth the teeth are related by continuity with the pharynx, œsophagus, stomach and intestinal tract, the larnyx, trachea and bronchi, and by contiguity as well as continuity with the eyes, ears, nose, and antra; and by means of the terminal distribution in and about the mouth of the sensory and motor branches of the trigeminus and their association with the great sympathetic nerve, the teeth are connected with the entire organism. It should also be remembered that the fifth is the largest of all the cranial nerves, and is the sensitive nerve of the head and face, the nutrient nerve of the teeth, and the motor nerve of the muscles of mastication, and by division and subdivision supplies branches to the eye and eyelids, the nose, the ear, the forehead and scalp, the upper and lower teeth, the gums and tongue, as well as to the muscles of the face; while its numerous ganglia and frequent communications with the sympathetic nervous system render possible the most formidable disturbances, when from any cause there is an interference with the eruptive process. Therefore, anatomically considered, the pathological bearings of deranged functions connected with the teeth cannot be easily defined nor limited.

What, then, are some of the diseases upon which dentition may be said to have an influence?

One of the most common results of difficult and painful evolutions of the teeth is a general febrile condition, marked by restlessness, irritability, and rise in temperature. Of this condition, Hunter, in his admirable work on "The Teeth and Disorders arising from their Painful Evolution," says: "The fever is sometimes slight and sometimes violent. It is very remarkable, both for its sudden rise and declension, and is probably caused by a disordered nervous system."

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*Dr. West, "Reference Hand-Book of Medical Science."

With many infants the fever comes and goes with the cutting of each tooth, so that there is no doubt in the minds of the best authors that it is a direct result of dental irritation. Diarrhœa is also an extremely prevalent disorder incident to dentition, attacks of which will come on as each group of teeth appears and pass away in the interval. Sometimes, however, from long continuance of the disease, the child passes into a state of marasmus. The diarrhœa not infrequently precedes the appearance of the teeth, and may occur without any turgescence of the gums or other signs of local disturbances. It is therefore unsafe to assume, in the absence of such local symptoms, that dentition is in no sense involved.

Eustace Smith, in his "Wasting Diseases of children," says: "Many infants are said always to get their teeth with diarrhœa, and there is no doubt that during the cutting of the teeth the bowels generally are in a state of irritability, for we know that during the period of dentition the follicular apparatus of the intestines is undergoing constant development, and is therefore especially liable to inflammation. This is seen in the follicular stomatitis and enteritis so common when the buccal and intestinal follicles are in a state of rapid growth." At the time of getting the teeth, the infant has ceased to depend entirely upon the mother's milk. Its digestive apparatus on this account is apt to be the more easily disarranged. The diet may be strictly suitable for an infant in good health, though it by no means follows that the same regimen will be found appropriate at a time when the febrile irritation set up by the developing teeth has reduced its digestive powers. The whole intestinal tract at such a time is in a state of exalted sensibility, and while the evolution of the teeth is a purely physiological process, it is, nevertheless, a powerful predisposing cause of diarrhœa and enteritis, and is so recognized by many of the most able writers and observers of the day and by most practitioners.

Infant malnutrition constitutes another very common disorder, sometimes attributed to dentition, and the weakness which it invariably induces renders the child less able to resist perturbating influences to which it may be exposed. When in this condition, the cutting of the teeth may produce a distinctly injurious effect upon the intestinal derangement. Indeed, cases are sometimes met with which persistently resist all treatment until the teething process comes to an end. Obstinate vomiting, spasmodic coughing, etc., having refused to yield to treatment, cease suddenly upon a group of teeth penetrating the alveolus and gum. Clonic or intestinal convulsions, a disease not common in this country, is most prevalent during the period of dentition, and writers generally believe dental irritation to be a direct cause of the convulsions by rendering the nervous system more impressible.

Dr. J. Lewis Smith mentions a case clearly showing the truth of this belief, and says that the effect of dentition is especially observable in weakly children when several dental follicles are undergoing active evolution at the same time. In the case cited, five teeth pierced the gums in the course of two weeks, after which no convulsive attacks occurred. Barron attributes these attacks in teething infants to the excitement of the nervous system arising from the pain which is felt in the gums and a determination of blood to the dental apparatus, in which afflux the whole vascular system of the head participates. Instances where the convulsions are due entirely to dental irritation—or if there are other causes, they are quite subordinate—are cited in substantiation of the belief that affections referable to the cerebro-spinal system are among the commonest results of pathological dentition.

Epileptiform convulsions, dependent upon the eruption of the deciduous teeth, are far from uncommon, and "in some cases," says Tomes, "where partially erupted temporary teeth have appeared to be causes of irritation, medical men—all other remedies having failed—have in several instances extracted them with the effect of at once relieving the convulsions."

Portal, in his "Observations on Epilepsy," says: "The extraction of sound teeth—all other means having failed—at once arrested the convulsions;" while in the *Dental Cosmos*, vol. xii, page 211, is mentioned a case where the patient was in a state of collapse, recovering after extraction. Drs. Coleman and Baly, in the *British Journal of Dental Science*, for 1863, mention cases in which epilepsy was apparently cured by the extraction or carious teeth, while the experiments of Dr. Brown-Sequard on lower animals lead, as he says, inevitably to the conclusion that epileptiform convulsions may arise from dental irritation.

Infantile paralysis is also classed among the diseases incident to dentition; and in the *Lancet* for February 28, 1860, Dr. Brown-Sequard speaks of a case of paraplegia in which the paralysis appeared at the very beginning of the second dentition, and increased and decreased alternately at the time of and after the cutting of each of the three molars. Dr. Fliess, in the "Journal for Sick Children," says, "When a child during the first or second dentition is suddenly seized with paralysis in one arm, or of the whole side of the body, or is affected in only a part of the same, without any obvious external cause, this is to be considered as a paralysis from dentition, and accurate examination of the mouth will confirm this diagnosis, for the teeth will be found firmly compressed within the gums."

Tetanus is also mentioned by Brubaker and others as among the possible diseases attributable to dentition, it being due to an abnormal excitability of the motor functions of the spinal cord, and an increase in reflex activity, a condition readily produced by injuries to the dental nerves.* Tetany may be described as a functional neurosis, manifested by tonic spasms particularly of the extremities, and an increase of mechanical and electrical excitability of peripheral nerves. It is considered by Herz to be due to spinal anemia, while Jacobi on the contrary attributes it to meningeal hyperamia, and Gowers explains it on the hypothesis of a primary lesion in the primary cells of the cerebro-spinal tract.

Post-operative tetany may supervene almost immediately after the effect of the anæsthetic has disappeared, or may be delayed from one to ten days. Unlike tetanus, it is rarely accompanied by septic conditions.

Secondary and direct affections of the eye are recognized by all our best occulists as being due sometimes to dental irritation, and Sameishon mentions a case of periostitis of the orbital cavity in a child two weeks old. The disease, which was accompanied by enormous protrusion of the eyeball, was caused by the premature eruption of the first deciduous molar, after whose extraction the affection ran a favorable course.

That aural troubles are produced through reflex irritation of the dental nerve, is a truth no longer questioned, and the fact has become so apparent as to be well recognized by aural surgeons everywhere. Chronic catarrhal inflammation of the dermoid meatus during teething, otorrhea, acute inflammation of the middle ear either of the catarrhal or purulent form, and otalgia, are often due directly to dentition, and many cases are reported by Brubacker and other authors to substantiate the statement.

Insanity is also said to be due sometimes to dental irritation, and Esquival, who was the first to point it out, says, " Among subjects of lymphatic and nervous temperament, the pains of the first dentition sometimes become the cause of insanity." And so with chorea, hysteria, and the many visceral disorders, occurrences of which are sufficiently frequent during the teething epoch to lead our best writers on infantile pathology to class them as incident to dentition.

Here, then, we have on the highest authority, a long list of the many ailments that may be consequent upon disordered dentition.

Just how this occurs in some instances is difficult to determine; but it has been thoroughly established that dental irritation may induce pathological conditions in other organs of the body, or in the nervous structures themselves, even without the existence of any subjective intimations of pain in the teeth, and it is therefore necessary for the practitioner to distinguish in each individual case whether the disorder is consequent upon some derangement of the teething process, or upon an abnormal condition of some other organ or organs, of which the dental difficulty itself is but a symptom.

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*What is here regarded by Brubaker and others as " tetanus " is undoubtedly the " tetany " of Corvisart, Trousseau, Erb, and Chvostek. The two diseases are not merely similar in name, but present many Characteristics which frequently lead to mistaking one for the other. There is, however, a wide etiological difference between them, though both occur as sequence of operative interference.

The clinical examination of infants and young children cannot be successfully practiced by the methods employed in the case of adults. The truth of this statement will be assented to by all who will reflect for a moment upon the great difference in the expression of the various organs in infancy and adult life. The predisposition of the infant is to disease, and owing to the preponderance of the nervous over the physical system it is universally conceded that a shock is much greater to an infant than to an adult, and consequently severe operations are never performed upon young children except to save life, but are usually deferred until dentition is completed.

There are those, says Dr. Berg, who believe that dentition cannot be productive of any serious pathological disturbances, but they are of right in the minority. When it shall have been proven that other physiological processes, like puberty and the cessation of the menstrual flow, are never productive of serious morbid states, then we shall give credence to such a view ; for the present it is emphatically the opinion of the vast majority of authorities that teething is frequently the only assignable cause of some of the diseases occurring during the dentitional epoch.

DENTITION *NOT* THE CAUSE OF DISEASE.

BY DR. J. EDWARD LINE, ROCHESTER, N. Y.

Discussion of the preceding paper, in the Union Dental Convention, held in Rochester, N. Y., October 1893.

The paper just read goes over the subject in question very thoroughly indeed from the standpoint of the essayist, which is that favored by authority, eminent and otherwise, and, studied in the light of past teaching, meets all the requirements of what must be characterized from another standpoint as the wrong side of the case. Since teething of the civilized infant began, every ailment not known to be contagious has been charged up to the eruption of the dental organs, a process as purely physiological as the growing of hair and nails. That this process is at times accompanied by more or less of discomfort during the gum-cutting stage is conceded, but that it is concerned, even at this time, in other than a reflex way, cannot be admitted ; while as to its relation as a well-defined cause of those alleged effects commonly known as diarrhœas, dysenteries and cholera infantum, they are too remote to be rated as even possibly consistent with fact. Irritability, or nervousness as we are apt to term it in the adult, is a condition that frequently attaches to some men under circumstances out of the ordinary, and as invariably makes a more or less profound impression on some distant part, the alimentary tract, for example. Not a few of those now present have at times experienced this unpleasantness as a result of worry incident to the preparation and presentation of a paper before some learned body, or even so simple a thing to some as the framing of a response to a toast at a dental dinner. Many a man has dropped his appetite at the bare announcement of the toastmaster's call. The prick of a pin at the hands of a four-year-old, just to hear the more recent arrival squeal, has all but driven the little automaton into convulsions, at the same time perverting the function of the alimentary tract throughout its whole extent. A fly on a man's nose will irritate beyond compare, and, if a busy one, raise his temperature to twice ninety-eight,—provided always you let the man himself tell it. All of these instances of irritability, nervous and other, are off the same piece with those credited to gum cutting teeth—they are reflex, occur only on occasion, and deserve to rank with the merely incidental. This is conceded, tacitly at least, by the medical attendant, who never restricts himself to the signs supplied by the oral cavity, but inquires carefully into the condition of the bowels, the number and character of the passages. He may or he may not indulge in the now and then excellent practice of gum-lancing, but even if he does he rarely foregoes prescribing for parts of the alimentary canal remote from the oral cavity. The prescription may consist of directions as to the food supply or as to medicine, or both. While he may, as in the case of the eminent authors quoted by the essayist, credit the ailment in question, in part at least, to the growth and development of teeth, his effort at cure is in another direction, and it would be far from right to say that the intelligent and conscientious practitioner was more concerned in getting rid of effects than in the rooting out of cause.

It is a matter of common knowledge that happenings are more or less rhythmic. There is rise and fall in the birth-rate, increase and decrease in mortality, certain diseases show a preference of one season of the year over another, more people become insane in midsummer than in midwinter, and, finally, more children are born in some months than in others. For present purposes, however, the birth-rate may be assumed as constant from month to month throughout the year. This being the case, it follows that as many babies are born in February as in August, and, as a further corollary, just as many are engaged in growing, developing, and cutting teeth. Conceding this, we would naturally look for as high a mortality from the so-called diseases of dentition in winter as in summer, or during the heated term. To this statement an obvious objection may be urged, but the heat of summer does not affect the infant within a number of degrees as it does the adult, and if it did, would be more than offset by the generally unsanitary condition of the average dwelling in winter, when a high mortality does not obtain, nor an extended sick-list, and yet dentition is in progress all the time.

It should not be forgotten that the most of the so-called diseases of dentition, those which are mainly responsible for the great mortality among infants—the diarrhœas and dysenteries, the "summer complaints"—are disturbances of the digestive tract. The occasional disorders upon which so much stress is laid in the paper, play but a small role in the mortality reports. It is possible that a corn may cause tetanus, but it is not of sufficient frequency to excite any wide-spread alarm. So these rare complications of dentition, even if they exist, need not engage our first attention. But it is altogether probable that they have a deeper origin, and the instances cited are examples of a mistaken diagnosis.

The period of dentition is not one of great functional change, like that accompanying puberty. It is rather one of steady progression, of develment in lines already laid down. The teeth have been continuously growing since before birth. Are we to expect great convulsive constitutional disturbance at a merely incidental period of that development? Coincidental with this advance is that of the digestive organs, and they are materially interfered with by the change in diet which is usual at about this time, a change which is uncalled for and unnatural, for the stomach is not sufficiently developed for independent digestion until the deciduous teeth are all in place. Why then should we look beyond these plainly perceptible facts to seek for some recondite, improbable origin for digestive troubles in children?

To what, then, should the majority of the so-called diseases of dentition be ascribed? Barring the possible exceptions mentioned a few moments ago, and which figure in this view of the matter as simply incidental, the answer is: Primarily to the quality of the food-supply, modified by quantity and the frequency with which it is exhibited. Other things being equal, that furnished by the mother is the food of foods, and with mothers who have had experience in these things, it is matter for congratulation when circumstances enable them to tide their offspring over the heated term. But even in these cases care to the utmost must be exerted, for while the mother herself may attribute the disturbances in question to the cutting of teeth, and especially the "stomach teeth," they are rightly credited only when placed opposite her personal shortcoming of downright indiscretion. A glass of hard cider or dry wine, a sour apple, a tart prune, vinegar in the salad, a little lemon-juice on oysters or clams, and a night off and the advent of the family physician upon the scene are foregone conclusions. The food-supply has been contaminated, and the proof is even more apparent than the flavor of field turnip in winter-made gilt-edge butter.

But it so happens that with the well-to-do, as a neccessity or as a convenience, and with the not-so-well-to-do as a convenience almost wholly, the mother-fed infant has gone out of fashion, and to-day the bottle-fed baby is very much to the front. The food-supply in these cases is of necessity from an outside source, hence the first search is cow-ward. Even here, and as a further protection against the ever-threatening so-called diseases of dentition, the supply must come unmixed,—it must be the output of but one animal, and that as free from disease of whatever kind as the conditions of domestication will permit. It may be too rich in fats, in which case it rests on the infantile stomach as easily and as long as would a lump of butter on that of an adult. Water is added to reduce it in richness, a little salt to dissociate the fats, and still the diseases said to be caused by dentition, difficult or otherwise, persist. The infant foods of the laboratory may be substituted, with or without milk as an ingredient, and still there is no improvement. The mother and her lay advisers look for teeth, the medical attendant examines the stools. Undigested masses of food, signs of excessive acidity of the secretions, or of the contents of the canal, suggest to him something radically wrong in the food or in its preparation. This wrong must be righted, and to that end thorough sterilization of the milk, the water with which it is reduced, or in which the laboratory product is dissolved or suspended, also of the bottle and its attachments, is prescribed; the quantity per feeding is determined, as also the frequence of its administration, and lo, the diseases so commonly referred to teething vanish so speedily that teeth and the incidents attending their eruption are all but forgotten. The conclusion, therefore, would seem to be that variations in the quality of the food-supply and the quantity and frequency of its exhibition are responsible, *except in incidental ways and cases*, for infantile irritability, fevers, convulsions, diarrhœas, dysenteries, and the so-called cholera of early childhood. To state it a little differently, these well-pronounced disturbances are due to ill-feeding,—the exhibition of food physically or chemically unfit, whether tainted by articles of food or condiments eaten by the nursing mother, or contaminated in transit from an outside source through the by products of micro-organisms, always most prolific and energetic during the heated term, when teething and the "diseases of dentition" are said to be at their height; notwithstanding, teething, like the babies themselves, is a constantly recurring factor, and a matter not of summer, nor winter, nor monthly, but *daily* occurrence. In fact, it would not strain the imagination to any great extent to reverse the terms of alleged cause and effect, and say that the diseases in question, instead of being caused by the growth, development, and eruption of teeth, were themselves active in contributing to the discomforts of the closing stages of dentition, commonly designated "gum-cutting;" that dentition becomes other than normal largely by reason of ignorance or indifference on the part of all concerned as to the exact requirements of the vegetative function of feeding.

DESTROYING PULPS WITH ARSENIC.

BY DR. LEROY REQUA.

Read before the Union Dental Convention Held in Rochester, N. Y., October, 1893.

The uncertainty attending the use of arsenious acid for the purpose of devitalizing the pulps of teeth renders its use unpleasant and unsatisfactory in many cases.

Many combinations of arsenic with other drugs, such as morphia, iodoform, cocaine, and the like, have been recommended to us in the form of nerve-pastes and powders, to facilitate the speedy and plainless death of the pulp.

They all leave much to be desired. We have tried them, and found them wanting. Much or part of the trouble arising from the use of arsenic, either alone or in combination, is due partly to the careless manner in which the application is made, and partly to the pressure caused in sealing the drug in the cavity. The best success I have ever had has been during the past year and a half, and I have been using clear arsenious acid and lots of care.

My method has been about as follows: Let us suppose a case of exposure in a molar, with a large crown cavity. The frail and overhanging edges are trimmed and cut back, so that a good view can be obtained of the pulp, or place where it ought to be.

With a large spoon-excavator the carious matter is removed as far as possible, without cutting into the chamber. If there is a tough, leathery skin surrounding and partially covering the pulp, it is left intact. The cavity is then bathed with oil of cinnamon, and the pulp is ready for death.

Next, from a piece of good, tough spunk, is cut a thin disk that will cover about one-half of the floor of the cavity. This is moistened with carbolic acid, and the smallest possible quantity of Squibb's arsenious acid is worked or pricked into one side of the spunk. This is then placed death side down on a glass slab, and dried with bibulous paper.

The cavity is made ready in the usual way, and the disk of spunk applied directly to the pulp. The cavity is then dried with hot air and sealed with gutta-percha. In sealing, a small piece of gutta-percha is warmed in the flame and mashed thin between the thumb and finger. This is placed on a curved spatula and drawn across the cavity, thoroughly sealing it without pressure.

A pledget of cotton is sometimes placed in the bottom of a cavity before sealing, to prevent pressure.

In approximal cavities, where the cervical wall is below the margin of the gums, the gutta-percha is pushed down against it with a thin bent spatula after the cavity is sealed. This prevents all danger of leakage and death to surrounding tissues.

According to Truman, the action of arsenic on the pulp is, first, excitation of the sensory nerves; second, paralysis of the whole nervous system of the pulp. Death does not follow until some time after, or until the arsenic is slowly absorbed.

The point which I wish to impress is this: The arsenic being worked into the little disk of spunk, does not give the exciting effect or shock to to the sensory nerves that it would were it placed there in a mass, in full strength.

The absorption takes place more gradually, and before much pain is felt paralysis begins, and by this time the full power of the drug at work.

Different writers vary as to the time occupied for the complete destruction of the pulp, some holding twenty-four hours is sufficient, others forty-eight hours, one even recommending repeated applications extending over a period of five or six days. My own experience has taught me that twenty-four hours is quite long enough to leave an application of arsenic in a tooth. Then the pulp can be extripated before the stage of paralysis has passed off. In the majority of cases, when the arsenic has been left for two or more days, a soreness of the tooth is complained of, and a marked congestion of the peridental membrane will be found.

In the anterior teeth, where conditions were favorable, I have had the best success from applying arsenic in the morning, and cleaning out the canal and filling in the afternoon. Another point which I wish to mention, is the generally accepted theory that an inflamed and aching pulp will not take kindly to arsenic. My experience has led me to believe that this is something of a fallacy. I have repeatedly had exposures of long standing, when the pulp was blue with congestion, and had given pain for days, succumb in twenty-four honrs after the treatment by this method. We have all too often heard the same tale of woe, sleepless nights and hours of pain and suffering following the application of arsenic.

I am happy to say that in the past year and a half I have had only one or two cases in which the pain continued for more than one hour. In most cases the pulp was quiescent on the patient leaving the chair.

Again I will say what I said in the beginning, that the devitalization of living pulps with arsenic is uncertain and unsatisfactory, and it is hoped that in the near future we will have an agent upon which we can place more dependence.

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THE MANAGEMENT OF THE GINGIVÆ.

BY FRED. I. SUMNER, D. D. S.

Read at the Union Dental Convention, Held in Rochester, October, 1893.

I hope, in this paper, in a measure, to magnify the importance of constantly guarding the gingival margins and protecting the inter-proximal gingivæ, and shall offer a few thoughts on pathological conditions of the gums and pericementum having their incipiency in this locality.

The care of the gingival margins, and especially the interproximal gingivæ, is of paramount importance, and all operations should be performed with that object constantly in view.

Examine a normal arch, and observe the protection afforded to the gum in these spaces, by the approximal surfaces of the teeth bellying out against one another.

By the use of the file, the form and general contour of these surfaces are so often altered that the teeth have changed their positions, so that they no longer brace one another at or near their occluding surfaces.

"After filing," says Dr. Black, " the interproximal gingivæ have been destroyed in some cases so completely that there is no soft tissue between the proximate surfaces further than the gingival line, and even on the cervical portion of roots a trace only of the peridental membrane remains. This slight and much-crowded tissue is kept in a state of irritation by the wedging of food against it."

Micro-organisms find a lodging place, and the irritation is of a character that will cause the patient to keep the mind constantly on the trouble. To obtain temporary relief, a cotton dressing charged with a soothing antiseptic—campho-phénique, for example—is the best remedy.

The neck of the tooth is that portion encircled by the gum, and is called the gingival line. The gum-tissue hugs, as it were, the normal tooth.

Guarding the gingivæ from injury is a prophylactic measure, and this, together with dental hygiene, will do much to rid us of some forms of gingivitis.

We have seen that all of the teeth are a little broader, in a mesio-distal direction, at or near the occluding surfaces than at their necks, and their approximal surfaces touch in such a way as to leave the V-shaped opening between their necks, which is filled with this gum-tissue. This, it seems to me, is one of the most powerful arguments in favor of contour filling, to guard the gum at this point by knuckling out the gold in a manner that approaches in form the strong walls of enamel, thereby preventing the food from being forced up against this tissue, which in man is not intended to be used for such purposes.

Any irritation of the pericementum is one of the most frequent causes of hypercementosis, with its train of suffering.

Food lodges here, the pressure causes pain, and to obtain relief the use of the pick is resorted to, the constant use of which adds fuel to the fire. Even when the quill pick is used with care, the sufferer will punch and scarify the gums, obtaining temporary relief, but not materially helping matters, and the irritation is increased. It seems to me a separating file ought never to be placed in the hands of a student, until he has a thorough understanding of how much injury may be done with it. In removing dam and wedges, be sure that little splinters and bits of rubber are removed. When examining a case presenting the symptoms—redness, heat, and a discharge on pressure—look for foreign bodies.

A gentleman presented himself to me recently complaining of that feeling of fullness, saying that the gum bled frequently between the lower bicuspids. I found a small hard substance, that to the sense of touch seemed enamel. After repeated efforts I removed a small supernumerary tooth, which was smaller than a grain of rice.

We hear patients complaining of amalgam exerting a deleterious influence on the health, and physicians refusing their services till all that "poisonous stuff" is taken from the mouth.

Is it not that unfinished shelf which is allowed to hang over into the soft tissues, providing a "boarding-house" for microbes? I refuse to insert an amalgam filling in the cervical margin, unless the patient can return and have it finished after it has hardened. The cervical margins of gold fillings in many instances are not properly finished. Suitable proximal trimmers are required to leave a smooth, clean margin.

The bands to roots, if fitted with accuracy, are not a source of irritation, but there are many cases of inflammation resulting from ill-fitted ferrules and caps.

In cigarette-smokers, I have observed a form of gingivitis that is peculiar, in that there is a purple line at the free margin of the gums, resembling that found in lead-poisoning. There seems to be a peculiar selecting power in these cells, whereby such substances as potassium iodide, mercury, and poisonous substances in the blood are taken up, and this may be the means of determining the presence of diseased conditions by observing physicians.

When the gum shows signs of irritation, always explore for tartar, which acts as a poisonous irritant.

After removing all traces of tartar and prescribing the indicated remedy and local wash, I insist on the patient, who has been suffering from calcic or other inflammation, using massage, and have observed rapid progress toward a normal condition when it was faithfully carried out in conjunction with the mouth-wash.

Pressure, gentle at first, rubbing the gums and beating them with the ball of the finger, coaxing the gums around the neck of the tooth, and using a brush with up and down (twirling) movement.

Where there is hypertrophy of the interproximal gingivæ, excise with gum-scissors and pack the space with cotton charged with a paste containing tannin, and prescribe hamamelis locally as a wash in combination with massage.

In children, these spaces, if exposed by the file, are a great source of annoyance. Mastication is painful.

It is wise to fill with gutta-percha or amalgam, bridging the spaces.

If nature had intended us to have cone-shaped bicuspids and molars, a provision would have been made for a very tough gum, able to resist all irritation.

Can it not be said that *no* dentist has done his duty who does not (as the very title of doctor would imply) teach his patients?

We cannot afford to let any one pass from the office without having learned some point, which enables him to aid in the preservation of the health of the parts which the dentist has spared no pains to restore to a clean and healthy condition.

THE ETIOLOGY OF PUS-FORMATION.

BY R. B. WINDER, M. D., D. D. S.

Read Before the Union Dental Convention, Rochester, N. Y., October, 1893.

The etiology or cause of pus-formation has been for years an obscure subject, and one of severe discussion; and as the question is not yet definitely settled, much diversity of opinion exists in regard to the matter. From all that is known and taught from our most competent sources, I am inclined to accept (*ad interim*) the theory that pus-formation is simply the arrest of development of the nucleus of the white corpuscle, which, if uninterfered with, goes on to a higher degree of development, and becomes the red corpuscle. Having stated my proposition as tersely as possible, I shall now proceed to give the reasons which have led me to this conclusion:

1. In all embryonic tissue the white corpuscles precede in appearance the red, which I accept as positive proof that the white at all events does not owe its origin to the red.

2. The red corpuscle, according to Huxley, always assumes the shape of the nucleus of the white. If the nucleus is in form round, the red corpuscles are round, as in man, etc. If the nucleus is oval, the red corpuscle is oval, as is found in the camel, some varieties of the lizard, etc. Now, while this does not prove that the red is derived from the nucleus of the white, it is certainly strongly suggestive evidence.

3. According to Professor Foster, of Edinburgh, all amœbæ are composed of undifferentiated protoplasm, which simply means that they contain within themselves the pabulum out of which all the tissues in the body can be elaborated, differentiated protoplasm meaning the pabulum-matter from which some of the anatomical elements necessary to tissue-formation are absent.

4. When lesion occurs, no matter where in the body, inflammatory action, etc., with its accompanying symptoms, follows immediately; white corpuscles or leucocytes start on the march, and rendezvous at the point of injury. Common sense would forbid the suspicion that they have marshaled their forces for injurious effect, and the very fact that they do contain within themselves all the elements for tissue-repair, suggests the logical deduction that they have assembled at the point of lesion to aid in repair, do good instead of injury, and consequently upon arrival they commence their good work. If the symptoms of inflammation, the inevitable result of all lesions, pass off by resolution, the assembly of leucocytes adjourns, and each individual goes on its way rejoicing. The work and mission of the repairing corps is over.

5. If, however, on the other hand, the inflammatory symptoms do not pass off by resolution, then comes the other alternative. If repair is to take place satisfactorily, pus-formation is induced, and the leucocytes do not disappear, but remain on the field of action.

6. The pus-corpuscle is a homogeneous mass, with a distinctive form and structure, readily recognized under the microscope, always appearing and preceding repair by granulation. As this pus-formation does not take place prior to the appearance on the stage of the leucocytes, it is unreasonable to suppose or draw the conclusion that the pus-corpuscle is derived from this source.

7. Lesions heal either by scabbing, first intention, or by granulation. It is only in the last-named repair that corpuscles appear.

The above contains in a nutshell my deductions and inferences in regard to the etiology of pus-formation, and they seem to be rational and common sense.

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DR. W. C. BARRETT, ... EDITOR.

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DENTAL EDUCATIONAL METHODS—THE ENGLISH VERSUS THE AMERICAN SYSTEM.

Ever since our English brethren first had any educational system at all—a dozen years or so—certain English dentists have made it their practice to sneer at American professional ways, and to assume a tone of superiority that has been extremely aggravating. These manifestations of a lack of professional courtesy and good breeding have not been confined to personal exhibitions, but have been made manifest in societies, and in professional gatherings of all kinds. When Englishmen of good standing have visited this country, and have made their appearance in our meetings, they have been made specially welcome, and have been tendered every courtesy possible; but when Americans of like professional rank have visited England, as a rule, they have met with supercilious treatment at the hands of these so-called leaders.

There must be some reason for this—unless it is claimed that English professional men are not governed by reason. It must either be that we are not worthy of better usage, that we are misunderstood, or that many English dentists are not at heart gentlemen. It is time that these things were probed to the bottom, and that we determine with whom the fault rests. The action of the British societies regarding the Congress, has roused a determination on the part of the better class of American dentists to have a fair understanding about professional matters. When the last international meeting was held in England, there came near being more American than English representatives present, and at all the congresses since held they have considerably outnumbered their insular brethren. Yet when a congress was held in America, there was a concerted movement on the part of the English to stay away.

The only excuse they urged was that a circular, that was issued by a body for whose actions American dentists were in no way responsible, claimed superiority for American dentistry. And yet that is precisely what our English brethren have been doing for themselves for a considerable time, and in a much more offensive manner than that of which they have complained. The circular at which they took such offence said that the first college, the first journal, and the first society were established in this country. Does any Englishman pretend to dispute this? It is a matter of professional history, known to all the world, which no intelligent man will attempt to deny.

But at the same meeting at which these complaints were so freely urged, the supreme professional authority of that country, the ruling professional society, in the most offensive manner possible, pronounced American colleges and American instruction so much inferior to those of Great Britain, that they could not in conscience allow any reciprocity between the two countries. The highest medical authority in Great Britain says of the action of the Council concerning the dental departments of Harvard and Michigan Universities:

"These two universities were recognized at the passing of the dentists' act, because they were the best of the American colleges, and it was felt that their curricula would improve as they went on, and that they might ultimately reach the high level required by the College of Surgeons of this country. This has not been the case, and the General Medical Council has just decided not to allow foreigners to obtain the privileges of registration upon easier terms than British subjects."

And yet the excuse for the discourteous action of the British Dental Association toward the Columbian Dental Congress, was that an unauthorized circular had claimed superiority for American teachings. Cannot an Englishman see what is manifest to all the rest of the world? Has he no idea of consistency whatever? Is not superciliousness and arrogance as indicative of ill-breeding in an Englishman as it is in an American?

Had the reasons for the exclusion of American college honors been honestly advanced, there would have been in this country no questioning the decision. Had it been urged that as Americans did not and could not recognize English dental education as competent for a qualification to practice in America, it was out of place for the English law to acknowledge our diploma, no fault could have been found. Had they been candid enough to own that American practitioners seriously interfered with the success of British dentists on their own ground, that many English students came to this country to pursue their studies in our colleges, to the loss and detriment of the schools that were being established at home, the justice of this protective policy, even though the boasted international practice of England was free trade, would have been at once admitted. But the sole reason urged, after protesting against our supposed assumption of superiority, was the unapproachable "high level" of English schools.

Is it a fact that we are inferior? We are quite ready to examine into the subject, and see whether this be the case. We will not claim an unapproachable "high level," unless there be something upon which to base the assertion. Let it be understood that our present educational status has been a matter of evolution. We did not have the great advantage which our English brethren possess, of following where others had led, and thus obtain the benefit of profiting by the mistakes of those who had preceded us. When our schools were opened they cultivated virgin soil, and it took time and experience to reach the desired efficiency. In the early days of special dental education, our colleges were not as effective for good as now. But at that time England had no dental schools, good or bad. When they began to organize dental teaching, we had made great strides in advance. They may, with advantage to themselves, perhaps, compare their schools of to-day with ours of two decades since. But how will they compare with the present?

Before there is any attempt to make a relative estimate of their merits, some idea of the end aimed at should be obtained, and this appears to be different in the two countries. We in America, by the very fact of our surroundings, have been made a practical, utilitarian people. We know little of classes and caste founded upon arbitrary distinction, and we care still less. It is inconceivable to an American that any people should support a privileged aristocracy that had not made its own position. Hence, in our educational affairs, we aim at that which produces the most direct results. In our dental schools, while we demand a proper preliminary mental equipment, we place even yet more stress upon manipulative ability. We teach our students microscopy, and histology, and embryology; but we place greater faith in physics, and technics, and mechanics. We strive to turn out finished, practical operators and practitioners, and not theoretical prigs and learned nincompoops, who know all of dentistry except how to fill a tooth, or practically treat a pathological oral condition. We can much more readily forgive bad spelling in a dentist than we can imperfect operations.

Let it not be understood that we encourage or permit illiteracy. All our colleges are combined in a National Association, and admission to each is governed by the same rules. Since the organization of this association, the standard has been raised each year, and this will be continued. Already it is proposed to extend the course to four years, while the more progressive demand a knowledge of advanced Latin and mathematics as a preliminary. In the State of New York the standard is that prescribed by the Board of Regents of the University of New York; but while this higher literary qualification is earnestly urged on all sides, there is no thought of dropping the standard of manual training and technic instruction to the level of that in England.

Perhaps we are all wrong in this, but that is certainly our aim, and the reputation that American dentists have made in all countries of the world is for thorough, efficient work, whatever their literary qualifications may be. They can possibly be convicted of solecisms in language, but there are none in their operations. We commence in our colleges with the very rudiments of mechanical work, and we keep the students busy in this department for three full years of training. No man can obtain a diploma from a recognized American college who has not attended three entire college terms.

The English system of education makes no such demands. The very basis of dental education is not taught at all. They demand but two years in college. As a substitute for the other year, they have an unprofessional, trade-union kind of apprentice system, by which the neophyte is bound out to an utterly irresponsible "master," who is supposed to teach him the principles of mechanics, but who usually makes of him a kind of under-servant, teaching only that which he can make most profitable to himself.

If there were any security that this master was a competent man himself, the outlook for better teaching would be more favorable. But we in this country are but too well aware that it is usually the charlatan, who confines his practice to the extraction of teeth and the insertion of the cheapest rubber substitutes, who takes dental students, because he can make them useful. It is but right to assume that it is the same class in England who desire apprentices, and they are not competent teachers. Experienced college instructors know that students who have spent some time under a preceptor, do not usually make the brightest graduates. Too much time must be lost at the outset in unlearning that which has been improperly learned.

Yet the certificates of such men as these are received at English colleges, as establishing the fact that matriculants know all of mechanics that is necessary for practice, and these elementary essentials are not taught. There is very little of technic instruction, in the American acceptance of the term. The curriculum of practical study is very narrow, as compared with that of American schools. In the Chicago College of Dental Surgery (and this one is instanced only because, as one of its teaching staff, we are better acquainted with it than with any of the other older schools) the number of regular professors is fifteen, with about the same number of demonstrators and recitation masters, making the whole actual teaching force about thirty. In the dental department of the University of Buffalo, the latest organized fully equipped school, the teaching force is nearly the same. If we may judge by the announcements of the English schools, their teachers number considerably less, and their demonstrations seem largely confined to the extraction of the organs which we teach that it is the business of the dentist to conserve. From our standpoint, then, English dental education is lamentably deficient and imperfect.

On the other hand, it is quite probable that the erudition of the English student is superior; that the graduate from the medico-dental schools—there are no purely dental colleges, for dentistry has no separate existence—will take higher rank, from a literary standpoint, than he of America. But which is best calculated to fulfil the ends of his existence? Which is really the better dentist? With which would almost any intelligent man sooner entrust the care of his teeth and mouth? A university education is greatly to be desired. But life is short, and if there is not opportunity to acquire both that and thorough professional training, we in America know very well which we will sacrifice. That the general professional sentiment is with us is proven by the fact that students flock to American Dental Colleges from all nations. It cannot be urged that this is because a diploma is more easily obtained here, for our College course covers three years, while that of the English schools, which are not thus universally selected, is but two.

If Englishmen could look at the matter from any other than their own standpoint, it might be evident to them that there are two sides to a stone wall. They might see that from our point of view, and for us, our system of dental education is really superior. We have no fault to find with them that they prefer their own; but let them not assume that because it is theirs, it is therefore better. Men with two eyes can see better than those who have but one. There is no reason why we of the two nations should quarrel; but if ill-feeling is to be avoided, we of America must receive the same courtesy that we show our English brethren. If Smith Turners are to rule professional matters there, let them not complain if men of the same kidney are raised up here.

SECRET PREPARATIONS.

A recent graduate of one of our dental schools, a practicing dentist who desires to observe the ethical teachings which he received when in college, writes his old teacher, asking what he shall do about the use of the secret preparations offered in such profusion for the painless extraction of teeth, and for other dental operations. He says that hawkers, frequently the agents of reputable dental dealers, yet more often the great discoverers themselves, urge them upon him, and assure him that they are perfectly harmless, and that they are used by men of the highest professional standing. He remembers that he was taught when an undergraduate that such things were not professional, and he asks how this is to be harmonized with the practice of men who bear names honored in dentistry, some of whom are themselves teachers, and who not only employ these preparations, but who sign certificates for publication, recommending them to others.

The professional rule which governs these matters is based upon sound common-sense, as well as that of professional honesty. When a patient places himself under the professional care of a practitioner, it is that he may receive the benefit of the special knowledge which he does not possess. He entrusts the whole matter to his professional adviser, and in all ages and all lands that confidence has been deemed one peculiary sacred. The secrets revealed to the priest, the physician or the lawyer, when acting in a professional capacity, even the courts hold sacred, and though the issue may be one of life and death, a professional witness cannot be forced to reveal them when on the witness stand. The trust on the part of the patient or client must of necessity be so entire and unreserved, that in his interest it is protected even by courts of law in trials for murder.

This sacred confidence demands something on the part of the professional man. He is bound by the most solemn obligations in every way to be worthy this implicit faith. He must guard the professional interests of his patient, if he practices any of the branches of medicine, as he would his own. He will not administer to him any drug except for beneficent purposes, nor will he in any way permit the health of the patient to be jeopardized. He cannot prescribe anything that he does not know will be beneficial. He can never urge the plea of ignorance, for that is to confess himself incompetent and unworthy to accept a professional relation.

How then can he administer a drug or compound of the nature of which he is in ignorance? It is not sufficient for him to plead that others use it. His patient, who knows nothing of drugs, pays him for positive knowledge, and not for empirical experiments. If he does not know his Materia Medica and the therapeutical action of his remedies, he is a quack, a pretender to knowledge that he does not possess, and is unworthy professional confidence. If he does possess this professional information, by what right can he prescribe in the dark, and administer remedies of which he knows nothing? There is no escaping the logical conclusion that the man who uses secret preparations is either a quack, an impostor, or a deliberately dishonest man.

It is but too well known to educated men that the originators of these secret nostrums are almost uniformly those who are without medical knowledge. As a rule, they are illiterate and have not enough education to write correct English. They do not know enough of pharmacy to write a perscription that shall not contain incompatibles. We challenge any man to name a single originator of these almost numberless obtunders that are now being offered to dentists, who has any real medical knowledge. Look over the list of them and see if it contains the name of one who is known to the profession at large. Almost without exception they are obscure men, living away from the centers of information. And yet the compounding of drugs of such potency requires something more than mere audacity and foolhardiness. Great discoveries in science are not made by accident. They are the result of profound knowledge and earnest observation. However it may be in theology, God does not hide these things from the wise and prudent and reveal them to babes and sucklings. If the professional man is honest and faithful to the trust reposed in him by his patient, he will pin his faith to those who have some knowledge, and not follow after every loud-mouthed pretender who may cry Lo here, or Lo there! If he believes his avocation to be but a mere trade, and not a profession, then perhaps he will not consider himself bound by professional ties and obligations, but will feel himself at liberty to practice quackery to his heart's content.

What shall be said of the men who lend their names to imposture; who over their own signatures certify to the merits of preparations of which they can know nothing? Perhaps they may urge that they have tried these nostrums with good results. That is but a plea for empiricism; for experimentation upon people whom they have in the most solemn manner engaged to defend against such practices. Some of these men—shame upon them—are, as our correspondent urges, themselves teachers, and therefore doubly bound to pursue a more honorable course. Let such false teachers be marked by every professional man as unworthy their position, blind leaders of the blind, whose destination is the ditch that they deserve.

There is but one honorable course for anyone who considers himself a professional man, and that is, when these secret preparations are urged upon him to demand the formula—not a mere list of drugs which are said to be the components, for the man who will for gain offer to professional men a secret preparation will not hesitate to preserve his secret by prevarication—but a working formula giving the proportions used, and in the event of a refusal, to denounce the quack who would prevail upon him to forfeit the confidence reposed in him by his patients, and prove himself as conscienceless or as unprofessional as his tempter.

As these preparations for obtunding sensibility are almost, or quite, invariably dependent upon cocaine for their results, we publish on another page a formula that has the approval of eminent chemists, and that has been used by dentists of knowledge and experience, that is better than any of these secret nostrums, and that will enable the practitioner to keep faith with his patients by prescribing and using only that of which he has some knowledge.

CLEFT PALATES AND LIME SALTS.

There has long been a mistaken idea among dentists, that teeth that are deficient in lime salts may be hardened and their texture improved by a diet that is rich in calcic matter. That pregnant women, who subsist upon fine flour and the like, are depriving their infants of that which is necessary to produce good teeth, and that they should take phosphate of lime to furnish tooth pabulum for the needs of their own system, and that of the fœtus which they carry.

Modern science has shown this to be an error. It is useless to give any form of lime salts *for trophic purposes*, because under no circumstances can they be assimilated. They may be useful as medicines, but never as foods, because the animal economy *cannot organize the inorganic*. If lime salts are needed, they must be derived from organic sources, and must be elaborated within the system. If phosphate or carbonate of lime be given, it must pass out of the body precisely as it entered it, and be eliminated. When these elements are needed the body will get them from the food, which must be organic, and then they can be built into the system.

There are many fables that have long existed among dentists, and one of these is that when lions and other felines are bred in captivity, the young have cleft palates because the mothers do not get bones enough in their food for the osseous system of their young, and that when she is fed upon food containing plenty of bones the young are perfect. This has so often been asserted that, although we were well convinced to the contrary, we wrote to the Curators of the Zoological Gardens in New York, Philadelphia and Cincinnati, to know if there were any truth in the assertion.

All agree that it is extremely difficult to raise lions, tigers and leopards, and that cleft palate is common. Mr. Brown, of the Philadelphia Zoological Gardens says:

"In well organized zoological collections there is no marked deficiency in bone making elements in the food offered. The need is so elementary that it is always supplied; but defective assimilation on the part of the animal itself is probably more or less present in all such cases."

Mr. Smith, of the New York Department of Public Parks, says that the carnivorous animals in the New York menagerie receive a very liberal allowance of bone every day, notwithstanding which it is very difficult to secure perfect young.

Mr. Stephan, Superintendent of the Cincinnati Zoological Gardens, says that unless the animals of the cat species are given plenty of bone with their meat when kept in captivity, they get weakly and puny. He has not been troubled with cleft palate in either lions, leopards or jaguars.

He gives crushed bones, because they seem necessary to make the food digest properly.

We all know that dogs gnaw and swallow bones. Nature has made provision in all the carnivora for the digestion of every part of the animals which form their food, and if they be not given the bones they become unhealthy. Especially is this true in wild animals kept in captivity. Under such circumstances, when they breed, the young are imperfectly developed, and cleft palate is one of the commonest defects. The mother; too, is very apt to devour her young shortly after they are born, through some strange perversion of nature. But that the defects are caused by a lack of lime salts, or may be remedied by any system of artificial feeding, is not true in either man or the lower animals. It is simply a question of natural, wholesome food, and development under conditions that are foreign to the natural state of the animal.

FILLING ROOTS.

It is probable that there is scarce a practicing dentist in the country who will admit that he does not know all there is to be learned concerning the filling of root canals. And yet, comparatively a small proportion of these operations are not open to criticism. The failures are not perhaps so much due to imperfect manipulation, as they are to defective preparation, for we assume that the sterilization of septic canals is a part of the process.

There are few practitioners who really comprehend the exact pathological condition of a diseased root, or who know how to restore it to a state of health. They are unable to distinguish between mere pericemental inflammation, and the breaking down of tissue beyond that membrane. Consequently, even if they know what course of treatment to pursue, they cannot tell when to stop it and fill the tooth. Overtreatment, it is well known, will defeat its own object, and destroy that which repair has already accomplished.

There are a few simple indications that will assist the practitioner in arriving at a clear comprehension of the condition of a root canal. Of course if there has never been any breaking down of tissue above the apex of the root, the case is very much simplified. But if there has been—and this will almost invariably be the case if there has been a fistulous opening—then to determine whether this territory has become aseptic, and if the process of repair has proceeded far enough to make it safe to close the foramen permanently, requires good judgment.

One of the surest of these indications is the dryness of the canal. No tooth root was ever yet in proper condition for filling when it was damp.

If the tissues above the foramen are yet breaking down, there will be serum about the apex, and this will find its way into the canal and make it damp at the extremity. The presence of moisture can best be determined by thrusting a smooth broach to the apex, withdrawing it and quickly wiping it upon the rubber dam. If it is not entirely dry, the traces may be seen upon the rubber.

Perhaps the best dryer for root canals is hot air. If a common valveless chip-blower be exhausted of air by pressure upon the bulb, and the point be held just above the flame of a gas burner or alcohol lamp, it may be filled with air as hot as desired. If now the point be placed in the cavity, a current of air so hot that a few blasts will raise the temperature of the whole tooth above the point of comfort may be injected. This will dessicate it completely. If the root is to be filled with chloro-percha, it should now be well drenched with eucalyptus and the hot air current again directed upon it, until the volatile parts are driven off and the remedy caused to penetrate well into the dental tubuli.

The eucalyptus is a partial solvent for the gutta-percha, and the latter very readily flows where the former has penetrated. Gutta-percha points may then be driven into the canal until it is full, and the dentist will have the satisfaction of knowing that every point has been occupied by the root filling. Of course due care must be exercised to avoid crowding the filling through an open foramen.

ADVERTISING DENTISTS.

Young graduates are apt to become very impatient that practice does not come to them immediately, and are sorely tempted to take up the methods of trade and advertise for business, under the impression that this is a short cut to prosperity. Let such look around them and see how many have gained by such methods. Count up the advertising men who have attained a permanent success, from any standpoint. They may seem to flourish for a while, but is it not the fact that they almost invariably become disappointed men?

Of course they cannot secure an established position in the minds of intelligent men, for advertising is known to be opposed to all real professional spirit. The clientele of an advertising dentist must be made up of the poorer class of people, who are ignorant of professional relations, and who never become permanent patients. As soon as the loud advertisements are stopped, or when some other dentist with a new kind of attraction makes his advent, the old one is forsaken and drops into poverty. If any misfortune overtakes him, or if he has passed the most energetic period of his life, he has no established practice, no old families upon whom he may rely, because his clientile has been made up of transient people, the poorer class, the least intelligent. He must always accept low fees, and his profits are swallowed up in advertising. Hence it is that the unprofessional dentist almost invariably comes to grief sooner or later. The only way to succeed financially as well as socially, is to keep within professional lines, and by steady perserverance to get the settled confidence of the community.

INFLAMMATION.

Some very sapient things are being said and written about inflammation, which indicate profound thought and—profound ignorance. Inflammation. (*inflammo, inflammatio,* to set on fire) is precisely what any other undue burning is—super-oxydation. Vital heat is the product of the normal oxygenation in the tissues, just as the heat of the stove or furnace is the effect of the oxygenation of the fuel. If the draught is too great and the fire burns too rapidly, it may be said there is super-oxydation and the heat is too intense. Unless it be checked the fuel is too quickly burned out, and perhaps the house set on fire.

In an analogous manner the oxygenation in the tissues may become too violent, and undue heat will be the consequence. The redness and swelling depend upon other pathological changes. Inflammation may be a pathological or physiological process. It is the first step in rebuilding tissue, as well as in tearing it down.

BIBLIOGRAPHICAL.

DISEASES AND INJURIES OF THE TEETH, INCLUDING PATHOLOGY AND TREATMENT. A manual of practical dentistry for student and practitioner, by Morton Smale, M. R. C. S., L. S. A., L. D. S., and J. F. Colyer, L. R. C. P., M. R. C. S., L. D. S. London and New York: Longmans, Green & Co., 1893.

This book is better described in its sub-title than in its title proper. It is not confined to injuries and diseases of the teeth, but covers nearly the whole of dental practice, if we except purely mechanical work. There are chapters devoted to orthodontia, to microscopy, to surgery, to abnormalities, to salivary calculus, and to many other subjects not comprehended in the major title of the book.

Both of the authors are teachers in the London Hospital Dental Schools, Mr. Smale being the Dean of one of the most important, and both are men of high mental attainments. It was to be expected that the work to which they have devoted so much of time and attention would mark a decided era in dental book-making. If the reader opens it in expectation of anything new or startling, or even of finding anything above the average of dental text-books, he will be disappointed. If he desires a usually reliable manual, which treats of most of the diseases of the mouth in the ordinary conservative and rather superficial manner, he cannot do better than to purchase it.

We must confess to a feeling of disappointment in reading it. Knowing that the senior author, especially, is accepted in England as an authority on matters pathological, we had looked for a work that was thoroughly original, exhaustive and profound. We find nothing in it which we have not met before, nothing that is very much raised above the common place. This is, perhaps, our own fault, for the titles and announcement promise not a treatise, but a hand-book.

It will be in the main a safe guide to follow, although there are some points in practice that will not be accepted by all. The methods recommended for filling teeth, especially with gold, are not always those most approved in this country. We think tinfoil worthy much greater attention than the book gives it, the subject being dismissed with half a dozen lines. We cannot approve the estimate placed upon implantation, and believe if the authors were thoroughly informed in what has been done in America, their opinions would change.

As usual in English works upon dental surgery and dental practice, much space is given to extraction of teeth. In America, we believe that everything else should be studied first, for extraction is a confession of failure. Certainly it must at times be the sole refuge, but a teacher of pathology should only recommend it as a last resort.

As a text-book in ordinary dental practice the work is commendable. But we have heard so much concerning the superior methods and teachings of the English schools, that when a volume written by some of their confessedly most eminent teachers is presented we look for something higher, better, more instructive than that from our own authors—and we must confess that in the work under consideration we do not find it.

THE HERMIT OF THE NONQUON. By Charles Nelson Johnson, Chicago: Rand, McNally & Co., Publishers, 1893.

It is an encouraging indication when we find members of the dental profession turning their attention to general literature. It shows that dentistry is attracting to its ranks men of culture and refinement, and that in dental practice and study they find a stimulus for mental exertion. The author of this book is well known to dentists as the Professor of Operative Dentistry in the Chicago College of Dental Surgery, and one of the editors of the *Dental Review*. This is, we believe, his first effort at novel writing, and the book of two hundred and thirty-five pages is exceedingly creditable to him.

The locale of the story is upon what was the Canadian frontier in the first part of the century. As this region was the early home of the author, he has probably woven into the thread of his story many of his own personal experiences and recollections, and this will in a measure account for the vividness of many of the descriptive passages. The plot is exceedingly simple and uninvolved, and flows with ease and steadiness from the opening paragraph to the denouement, near the close. In fact, the narrative is little more than a thread with which to connect a succession of bright, clear, animated, sprightly stories of homely border life. The author is evidently a lover of nature and a close observer of her moods, and his sketches forcibly remind one of the famous "Adirondack" Murray, in his palmiest days. Indeed, we question if "The Big Catch," "The Deer Hunt," and "The Old-time Revival" are not better in their way than anything of the kind ever penned by the once renowned clergyman. Gabrielle, and Philander, and Pierre, are characters worthy that king of Indian romance, Fennimore Cooper himself.

The chief strength of the book lies in these sketches, and the vivid portrayal of the incidents of homely life which they contain. There is here and there a choice piece of sentiment, or a highly wrought descriptive paragraph, but these are only the polished bits of indigenous wood, or the burnished native agates that are in perfect harmony with, yet lustrously adorn, the homely tale. We can assure the prospective reader of Dr. Johnson's book, that he will find much to charm the mind and nothing to shock the sense in this captivating volume.

ANATOMY, DESCRIPTIVE AND SURGICAL. By Henry Gray. F. R. S., with many drawings by H. V. Carter, M. D. New American, from the thirteenth English edition. Edited by T. Pickering Pick, Surgeon to and Lecturer on Surgery at St. George's Hospital. Philadelphia: Lea Brothers & Co., 1893.

Since the first edition of this work was issued, in 1857, it has held a foremost position among professional text-books. Any new book on Anatomy was at once compared with Gray, as the standard by which it might be judged. So far, none has been able to dethrone it.

The great success of this book has arisen mainly from the thorough systematization of the subject, and the clearness of the descriptions. In this latter respect, it seems almost ideal. The language is so lucid, so concise, and the words are so aptly chosen, that the book, despite the technicality that is a part of the subject, reads charmingly.

In this respect it is a rival of another famous medical classic, Watson's Practice of Medicine, which through its great literary merit maintained its place long after many of the methods recommended were obsolete. "Gray" is known to every medical student, and is accepted as a text-book in every college in which English is spoken.

The last edition is greatly improved by its colored illustrations. With these to aid the learner, and the perspicuous and vivid word descriptions, there should be no difficulty in easily mastering that most difficult of all undergraduate studies, human anatomy.

THE STUDENTS' DICTIONARY OF MEDICINE AND THE ALLIED SCIENCES. Comprising the pronunciation, derivation and full explanation of medical terms, together with much collateral descriptive matter, numerous tables, etc., etc. By Alexander Duane, M. D. Philadelphia: Lea Brothers & Co., 1893.

This work will bear the most careful scrutiny. The more minutely it is examined the broader seems the scope and the more comprehensive the vocabulary. The author was eminently fitted for his task, not only by his scholarship, but by his previous experience. As the reviser of medical terms for Webster's International Dictionary, he gained a reputation for terseness and accuracy that is amply confirmed by this volume.

The book pretends to provide medical students with full information concerning every technical term that they will meet with in obtaining their medical education. We have looked through it as carefully as time permitted, without failure to find any desired word. Not only is there a full definition of each term, but its origin and pronunciation are plainly given. A great deal of other information is also comprised. Thus, when any special disease is named, the usual cause, with symptoms and treatment, will in many cases be found, and thus the work will prove a valuable aid in practice. When organs are named, the descriptive definition will be accompanied by a brief sketch of their structure and functions. There are many copious tables, and altogether the book will be found a useful vade mecum for practitioners as well as pupils.

A PRACTICAL TREATISE ON MECHANICAL DENTISTRY. By Joseph Richardson, M. D., D. D. S. Sixth edition. Revised and edited by George W. Warren, D. D. S., with six hundred illustrations. Philadelphia: P. Blakiston, Son & Co., 1893.

It is really necessary but to make the mere announcement of a new edition of this standard work, to call the attention of the world of dentistry to its merits. It has so long been accepted as the highest authority in its field, that it is neither to be written up or down. But this new edition presents some special merits of its own. While the number of pages has not been materially increased, the contents have been very carefully revised, and placed in harmony with the most modern methods. Whole chapters of the last edition have been eliminated, others entirely rewritten, and new ones have been added. New operations and methods are clearly described, while those which have become obsolete have been entirely omitted.

A great deal of space is devoted to crown and bridge work, and all the latest manipulations are detailed. Indeed, if we were to criticise it in this department, we should say that it is almost too full, for sometimes methods are given as distinct which are so nearly identical as to be practically interchangeable. The editor has, however, done his work well, upon the whole, and has secured for this edition what the preceding ones of Richardson have always maintained—the leading position as a text and reference book in general prosthetics.

OUTLINES OF PRACTICAL HISTOLOGY. A Manual for Students. By William Sterling, M. D., Sc. D. Brackenbury Professor of Physiology and Histology in the Owens College, and Professor in the Victoria University, Manchester, England. With 368 illustrations. Second Edition. Revised and enlarged. Philadelphia: P. Blakiston, Son & Co., 1893.

In the study of tissues the most important factor is correct methods. These are constantly undergoing changes and improvements, and hence the student needs for his text-book one that gives all that is latest and most perfect. In this respect the work of Prof. Sterling is certainly to to be commended. The most recent observations and studies of men like Ehrlich, Garbini and Ramón Y. Cayal are detailed, and their most improved methods are given.

As a text-book in dental histology it is not sufficiently comprehensive for our colleges, but to the student in general medical science it will prove invaluable, while the methods detailed will be of great assistance to the dental histologist, and the book is well worth a place in his library.

THE SCIENCE OF MECHANICS. A critical and historical exposition of its principles. By Ernst Mach, Professor of Physics in the University of Prague. Translated from the second German edition by Thomas J. McCormack. With 250 cuts and illustrations. Chicago: The Open Court Publishing Co., 1893.

This is not a treatise upon Mechanic Arts. Its scope is rather theoretical than practical. Its aim is to furnish a clear exposition of the principles of mechanics, and to clear up metaphysical obscurities. This is plainly expressed in the title of the book, for mechanics is treated as a branch of physical science. The author claims that the mechanic arts lie at the very foundation of all pure science, and it is from this standpoint that the book is written. In both statics and dynamics fundamental laws are considered, and the relation of mechanical principles to these laws are studied.

To him who desires to comprehend the real science of mechanical principles, their mutual interdependence and the gradual evolution of their comprehension, this volume will be invaluable. It is a book for the thinker and the advanced physicist.

CURRENT NEWS AND EXCERPTS.

THE DENTAL LAW OF THE STATE OF NEW YORK.

We present herewith the New York State Dental Law. If the copy furnished us is a transcript of the original, we can only say that it is a pity it was not properly edited before its passage by the legislature.

We think also that a great mistake was made in allowing a medical diploma to stand as a sufficient qualification for the practice of dentistry. Doctors of medicine are but little better qualified for our specialty than doctors of divinity, and already embarrassing cases are arising almost daily.

CHAP. 661.

An Act in relation to the public health, constituting Chapter Twenty-five of the General Laws. Approved by the Governor May 9, 1893. Passed, three-fifths being present.

ARTICLE IX.

PRACTICE OF DENTISTRY.

§ 160. Qualifications. No person shall practice dentistry in this State as principal, assistant, agent or employe, or advertise or hold himself out to the public as so practicing, who shall not be licensed and registered as prescribed in this article, or who was not lawfully licensed and registered when this chapter takes effect. Nothing herein shall disqualify any person for performing merely mechanical work upon inert matter in a dental office or laboratory; or a registered student, for the purpose of clinical instruction in the presence and under the immediate supervision of his preceptor, from assisting the latter in dental operations, or a duly licensed and registered physician or surgeon for his lawful acts in the practice of his profession.

§ 161. License. A person shall be deemed licensed to practice dentistry in this State who shall have attained the age of twenty-one years, and shall have had properly, granted to him, either by the Dental Society of the State of New York, or an incorporated medical or dental school approved by such Society, a diploma conferring a recognized medical or dental degree. No diploma shall be deemed valid if conferred irregularly through fraud or false representation, or without substantial compliance by the person to whom granted, or the corporation conferring it, with the general statutory requirements of this State as to course and duration of preparatory and professional study, and also with the regulations of such State Society and of the corporation conferring the diploma as to study, attendance, examination and character.

§ 162. Registration. Every person practicing dentistry in this State shall register in the office of the clerk of the county where his place of business is located, or of the county to which he shall transfer it, in a book kept by the clerk for such purpose, his name, age, office and post-office address, legal authority for practicing dentistry, and date of such registration, which registration he shall be entitled to make only upon presenting to the county clerk a certificate from the member of the State 1Board of Censors, appointed by the State Dental Society for the judicial district in wh ch such county is situated, to the effect that such applicant has received a proper diploma as required by this article, and upon the making by such applicant of an affidavit stating his name, age, and legal authority to practice dentistry within this State. Every such certificate shall be filed by the county clerk, and, upon the payment of fifty cents, the county clerk shall furnish to the person registering a certified copy thereof. The affidavits made in pursuance of this section shall be preserved by the county clerk in a volume kept for that purpose. Any registration procured by fraud or false statements shall be deemed void, and the county clerk upon the presentation to him of a certified copy of the judgment convicting any person of a violation of any provision of this chapter, or of the penal code relating to the practicing of dentistry, shall note the fact and date of such conviction upon the registration.

A person heretofore lawfully entitled to register as a dentist in this State, but who has failed so to register, on paying the fees required of candidates for license to practice dentistry, may present to the State Board of Censors a sworn statement of his qualifications, and the reasons of his omission to register when entitled so to do. If after examination of the applicant and his proofs, and such other proofs as it may demand, such Board shall be satisfied that the applicant was entitled to register at the time claimed, but failed to do so by reason of ignorance of the law, absence from the State, or other reasons sufficient in their judgment to excuse the neglect, it shall give to such applicant a certificate entitling him to register in the office of the clerk of any county as of the date when he would have been entitled by any law then in force so to do.

§ 163. Study under private preceptorship. Every person who was actually engaged in the study of dentistry under private preceptorship in this State on the twelfth day of May, eighteen hundred and ninety-two, and within three months thereafter, filed with the secretary of the State Dental Society a statement of his age, address, commencement of terms of study, and the name and address of his preceptors, certified that so far as relates to himself such statement is true, for the purpose of determining the statutory period of four years, shall be deemed to have been engaged in the study of dentistry from the commencement of the term stated in such statement.* Every person commencing such a course of study since May twelfth, eighteen hundred and ninety-two, shall file such a certificate, and until filed the term of four years of preliminary study required by law shall not be deemed to have commenced. No student shall be eligible for examination by such Society who shall not have filed one of such certificates. Such certificates shall be preserved, bound and indexed by the secretary of such Society. Any wilfuly false statement in any such certificate shall preclude the persons making it from the secretary of such Society. Any willfully false statement in any† such certificate shall preclude the person making it from the privilege of examination. Every student before filing such certificate shall pay to the secretary of such State Society a fee of five dollars. No person without a proper diploma conferring the same shall assume the title of Doctor of Dental Surgery, or Master of Dental Surgery, nor shall append to his or her name the letters D. D. S. or the letters M. D. S., or any other letters specifically used by any medical or dental college, school, board or society, to indicate that the person to whose name they are appended holds a recognized medical or dental degree.

§ 164. Disposition of fines. Except as provided in this section, a fine or forfeiture of bail collected in consequence of a violation of this article, shall be paid to the Dental Society of the State of New York. If at the annual meeting of such Society, the treasurer shall report an excess of the sum so paid over the expenses of the Society in enforcing this title, such excess shall be paid by him to the Treasurer of the State, and become part of the common school fund. If any such fine or forfeiture is collected in an action brought by an incorporated county medical society for a violation of this article in relation to medical diplomas, such fine shall be paid to the prosecuting society.

SOMETHING WORTH COPYING.

A provision of the Dental Act, recently passed in the British Province of Tasmania, establishes that every licentiate under the law, before receiving his diploma, shall sign the following declaration:

> "I hereby promise faithfully in the event of my receiving from the Dental Board of Examiners a license entitling me to practice dental surgery and dentistry in Tasmania, to refrain from conducting my practice by means of the exhibition of dental specimens, appliances or apparatus in an open shop, window, or show-case, or otherwise exposed to public inspection, or by means of public advertisements or circulars describing modes of practice or patented or secret processes, or by the publication of a scale of professional charges, or to employ any other unbecoming modes of attracting business, nor will I allow my name to appear in connection with anyone who does so. I also promise, so far as lies in my power, to maintain the honor and interests of the dental profession, and the spirit and provisions of 'The Dentists' Act,' so long as I hold the license of the Dental Board of Examiners."

The Dental Department of the University of Buffalo requires its candidates for graduation, before receiving the diplomas, to subscribe to the following pledge or obligation, which is administered in the presence of all who attend commencement exercises:

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* If any one can determine what the preceding paragraph means, he is wiser than the editor of this journal.

† So in the original.

"Dentistry is a branch of the great and noble profession of medicine, and its practitioners are not to indulge in the methods legitimate only to trade, but in all things are to conduct themselves in a manner worthy their vocation. Before you are admitted within the sacred precincts, the regulations of this Department require that you should express your willingness to do this. You will therefore listen attentively to what follows, and at its close will each signify your assent to that which forms one of the express conditions upon which your degree is conferred.

You do promise, upon your honor as a man, to follow that course of practice which in your judgment shall be for the best interests of your patients, and to abstain from that which will be deleterious or hurtful.

You will not, at the solicitation of any one, ruthlessly and needlessly sacrifice the organs which it is your professional duty to conserve, nor for your own personal gain advise to such a course.

To all who may entrust themselves to your professional care, you will give your best and most conscientious services, striving in all things to prove faithful to the confidence placed in you.

You will be patient and gentle in the discharge or your duties, and will never take advantage of professional relations for any unworthy purpose.

Towards your brother dentists you will always maintain a high and professional tone, and you will abstain from all wanton injury to their interests and reputations.

Finally, you do promise to avoid those acts which are by common consent considered unworthy, and in all things to conform to the usages of reputable professional life.

Do you so promise and affirm?"

Neither public sentiment nor the law of the land permits anything further in the State of New York, nor would it be possible to revoke a diploma when once issued. But some concerted action in this direction by the National Association of College Faculties, with the proper agitation by dental societies, might soon educate the people to the point of maintaining such legislation as would force compliance with these wholesome provisions, or in case of a refusal on the part of a graduate, either to warrant a cancellation of his diploma, or place him outside all professional lines. A pledge to conform to "all the usages of reputable professional life" is also inserted in the body of the diploma of the Buffalo school, as a standing witness against the graduate who indulges in unprofessional practices.

DENTAL OBTUNDENT.

The following formula for a local obtundent has not the advantage of being a secret preparation; it has no one to publish quack certificates in its favor, and there is no liar, gifted as such by nature and perfected by constant practice, to vaunt its merits. In all other respects it is quite equal, if not superior, to any of the nostrums now offered by every alternate cross-roads dentist to a long-suffering profession:

℞	Atropiæ	grs. 1-10
	Stropanthii	grs. 1-5
	Cocaine Mur.	grs. 50
	Acidi Carbolici	grs. 10
	Ol. Carophylli	m. 3
	Aquæ Destillatæ	℥ 1
M		

Each of the ingredients is compounded for a special purpose. The first is a narcotic and antispasmodic. The second is a heart tonic. The third is of course that on which the preparation solely depends for its anæsthetic action. The fourth is an antiseptic, preserves the preparation from decomposition, and perhaps adds to its anæsthetic properties. The fifth is also an antiseptic and slightly anæsthetic. It might be left out of the compound without seriously changing its character. The sixth is simply the diluent. The formula contains everything that can be useful in a cocaine preparation.

A PLAIN OPINION.

Two dental editors did "lock horns." He of the whilom *Dental Tribune* said of the one of the *Western Dental Journal:*

> "The *Western* has undoubtedly been at its best during the last six months; during that period (excepting the labors of the editorial staff) *it has not published a single line of original matter written expressly for it.* In other words, not a single dentist has taken enough interest in the journal to make to it a solitary contribution. Its course has been merely that of the parrot, repeating, usually two months later, what some other journal has said. Not only does the parrotism affect the general run of the pages, but the disease has made serious inroads into the editorial department. The *Western* has in six months published less original material than would fill twelve pages of this publication, and one-seventh of that was in reference to the *Dental Tribune.* The *Western* deserves first prize for inactivity; it demonstrates its uselessness every month. During the past half-year, whatever editorial statements made relative to dentistry originated in the office of some other dental journal. If there is a dental journal (except those which profess merely to republish), that can shed less light than the *Western* is shedding at present, it is not on our exchange list.

The *Western Dental Journal* had already said of *The Dental Tribune*——but we remember the old proverb, "*De mortuis nil nisi bonum,*" and so refrain, as it is a matter between the dying and the dead.

THE ILLINOIS STATE BOARD.

The Illinois State Board of Dental Examiners has issued a circular in which the members state that the only real protection against dental quackery in that State will be found in forcing ALL those who desire to enter practice to appear before them for examination.

They further threaten that no college which does not allow this Board, or any designated member, to be present at all examinations, and to scrutinize all questions and answers, shall not be classed as reputable.

That is modest—very. Who is to determine the qualifications of this Board for that work? Had they been requested to sit as such examiners by the colleges themselves, or were they officers of and duly elected by the State Dental Society, there might be some propriety in the requirement. But for a Board appointed by the Governor of the State, and therefore liable to be swayed by political influence to take this stand, seems a little "cheeky."

AN AMENDE HONORABLE.

In the last number of this journal, the editor of *The Dominion Dental Journal* was taken to task for certain expressions regarding American schools and educational work. He feels aggrieved because we called him by name, and claims that the criticism should have been impersonal. Perhaps he is right, but he is so well and widely known in dentistry that to refer to him as "Editor" seems an affectation.

He also claims, not unreasonably, that when we quoted his criticism upon the colleges of the past, we should have included the statement that they were not intended to apply to the schools of the present. In justice to him we make that statement now. It was in no spirit of personal disrespect that the article in the last number of this journal was written, for we have always entertained and trust ever to cherish the fullest appreciation of his high character and abilities. But the truth is, he was, perhaps unfairly, seized upon as a type of something which this journal desired to antagonize. We were looking for a head to hit in defence of certain principles, and unluckily that of the respected editor was raised to view at the critical moment, and got that which was meant for a class.

AN EXCELLENT EXAMPLE.

The Central Dental Association of Northern New Jersey gets out the neatest and most unique announcement of its meetings that comes to hand. There are a number of original ideas connected with this organization, not the least meritorious of which is that of sitting down to dinner together previous to the monthly sessions. A generous menu is presented, at the reasonable price of one dollar per plate.

What a humanizing and harmonizing influence this dining together must have upon the members. How all asperities and petty jealousies must be drowned in the soup or swallowed with the oysters, and how filled with good food and good feeling must they repair to the session room, there to compare experiences in a spirit of emulation rather than rivalry, always keeping in mind that there is some single point in which the humblest can stand as a teacher to those most sage and experienced. What a pity that more societies do not follow the example of the Jersey dentists.

A NOTABLE ADVANCE.

We are asked to state that the President of the Central Counties Branch (of the British Dental Association) has taken the additional name of Coleridge, so that in future he will be known as Walter Reginald Coleridge-Roberts.—*Journal British Dental Association.*

That is something worth while. True merit will always force its way to the front. This new ornament to dentistry comes to join the Browne-Masons, the Cornelius-Wheelers, the Newland-Pedleys, the Charters-Whites, and the other hyphenized embellishments of an otherwise plain profession. Walter Reginald Coleridge-Roberts! ! ! Ah me! American dentistry can never rise to such heights as that. We must—alas, we feel that we must—acknowledge English professional superiority.

College Dental Society.—The students of the Dental Department of the University of Buffalo have organized a dental society, and have done the editor of this journal the honor of naming it after him. It meets regularly, and already some very good papers have been presented before it. The officers are:

President		F. L. Sibley.
Vice-President		J. W. Beach.
Secretary		F. E. Cloud.
Treasurer		Annette Rankin.
Executive Committee	W. H. Snider	A. G. Bulloch.
	Albert Heinrich	W. B. Bartlett.
	A. E. Mimmack	J. E. Povall.
	S. E. McDougall.	

Colleges and Journals.—Canada has a population of only 6,000,000. When our neighbors had 25,000,000 there was neither a dental college nor a dental journal in the Republic.—*Dominion Dental Journal.*

Neither was there anywhere else in the world. England had nothing of the kind, and did not establish either until long after America had marked out the way. The first dental college, the first dental journal, the first dental society, and the first organization of dentistry as a profession were in America. At the present time she has by far the greatest number of schools, journals and societies of any country in the world, and she has a greater proportion of dental graduates among her practitioners.

CONSISTENT.

Dr. Ernest Hart crossed the Atlantic Ocean to attend the Pan-American medical congress, which met in Washington last summer. His first act was to register at the Arlington Hotel as " Ernest Hart, F. R. C. S., D. C. L., editor of *The British Medical Journal*, Dean of St. Mary's Hospital." Then he lectured the medical profession of America upon ethics and professional proprieties, warned them against advertising through newspaper interviews and reports, denounced consultations with homœopaths, and proceeded generally to enlighten benighted Americans upon professional morals from the exalted standpoint of an English professional man and teacher. For some unaccountable reason his efforts did not seem to be appreciated here, and it is probable that *The British Medical Journal* will continue to hold but a poor opinion of the status of professional affairs in America.

THE EIGHTH DISTRICT SOCIETY.—The Eighth District Dental Society of the State of New York is trying the experiment of holding monthly meetings. That for November met in Batavia, where the members were the guests of Dr. H. J. Burkhart, the President of the Society, who entertained them at dinner at the Batavia Club. The menu was a very comprehensive one, and from " huitres " to " café " was delightfully served. Covers were laid for about fifty guests. After the dinner the regular exercises were held, and paper and discussion detained the members until a late hour. The hospitality of Dr. Burkhart has never been exceeded in the history of the society.

A RESPONSIBLE APPOINTMENT.—Prof. Truman W. Brophy, of Chicago, originator of " The Brophy Operation " for the radical cure of cleft palates, has been appointed Oral Surgeon to the Presbyterian Hospital, one of the largest institution of its kind in the West. Prof. Brophy has devoted much attention to surgery, and has performed many important and capital operations with enviable success. He is a born surgeon, cool, skillful, daring, enthusiastic, and many of his friends believe that he should devote his attention exclusively to that specialty. Already his surgical practice is large and constantly growing, and no operation is too formidable for him.

WHAT DOES THIS MEAN?—We have received a portentous circular from J. T. Atkinson, Secretary of the Kansas City College of Dental Surgery. We know the Kansas City Dental College, of which J. D. Patterson is Secretary, and if another has been opened with a name so nearly like the old college as to cause confusion in the minds of members of the profession, it will probably be pronounced a deliberate attempt to trade upon the reputation of another, and will be denounced accordingly.

IN CALIFORNIA.—The dentists of the Pacific slope propose holding in San Francisco, early in June, a dental convention that shall bring together the representative men of the whole country west of the Rocky Mountains. Active work has already been commenced, and the prospects are good for a successful and memorable meeting.

CATCHING'S COMPENDIUM.—Dr. B. H. Catching, of Atlanta, Ga., has for the past three years issued a compendium of that which is of importance in the journalistic literatures for the year. Another volume of selections from the journal for 1893 will soon be ready.

THE

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THREE CASES OF SEPTICÆMIA OF DENTAL ORIGIN.

BY W. D. MILLER, A. M., Ph. D., D. D. S., BERLIN, GERMANY.

Many cases of death from blood-poisoning resulting from a diseased condition of the teeth having been reported of late, it might appear that the dental profession had become so well aware of this possible result of the neglect of the teeth as to render reports of further cases unnecessary.

I take the liberty, nevertheless, of presenting the following cases, for the reason that one of them in particular is doubly interesting, in that it shows how bacteria associated with an abscessed tooth may be carried by the blood to other parts of the body, and give rise to metastatic processes of dental origin.

CASE 1.

Boy 9 years old, said to have been ill for 10 days, and suffering at the time of admission from a large abscess on the right lower jaw, which discharged large quantities of pus externally as well as into the mouth. Two days subsequent to the appearance of the abscess, the boy fell in getting out of bed, causing a bruise of his left thigh, followed by considerable swelling and redness.

Status praesens: Boy pale, highly feverish (139°); right cheek much swollen in the region of the lower jaw; a fistula upon the neck, from which drops dirty, brownish pus. The jaw itself feels hard and putty-like; fluctuation indistinct. Several very carious teeth in the right lower jaw are loose in their sockets and surrounded by pus. The mouth can be opened but little, speech being difficult and indistinct. Tongue thickly coated, *fœtor ex ore*. On the left thigh, particularly in the middle and lower region, a conspicuous swelling, distinct fluctuation, especially above the internal femoral condyle; skin tense, no redness, strong dilatation of the veins; knee slightly bent, very painful; pulse very frequent (160 a minute), small; great excitement and diuresis, sleeplessness and lack of appetite.

Following day: Temp. 40.3°; pulse 160. Operation:

1—Under ether narcosis.—The abscess is opened by an incision over the internal femoral condyle, and a subperiosteal cavity, the size of the fist, discovered, filled with thin fatty ichorous pus, which has the same odor as that which escapes from the abscess of the jaw. The kneejoint is not penetrated, and no point of suppuration or fistula leading into the bone can be discovered. Counter incision on the outside of the thigh, drainage, tampon.

2—A long incision along the border of the lower jaw lays open the abscess. The whole jaw proves necrotic and bathed in pus. The right tempero-maxillary is opened. Extraction of several loose teeth; tampon.

Following day: High fever; bad general condition; pulse between 160 and 180; no ague. Bandage. Femur cavity dry, but profuse pus around the jaw. Sleeplessness. The next morning, early, death ensued under increase of the symptoms.

In the pus of both centers a peculiar capsule diplococcus was found, similar to the coccus of sputum-septicæmia. Examination of the blood, negative.

Diagnosis: *Periostitis acuta mandibulæ dextræ, et femoris sinistri.—Sepsis.*

The abduction showed the organs without pathological changes, excepting a slight *pleuritis fibrinosa* on both sides, and an abscess, as large as a cherry, on the inferior lobe of the right lung, under the pleura, filled with ichorous pus like that of the other cavities.

CASE 2.

Patient: Woman 40 years old. Extraction of second left inferior bicuspid on account of painfulness and swelling. On the following day, the swelling not subsiding, an incision was made through the gums by a physician. Notwithstanding the escape of a large quantity of pus, the condition of the patient grew worse, requiring another physician to be called in.

Status on the evening of the second day: Considerable swelling of the left lower jaw, extending from the region of the submaxillary gland to the chin, fluctuation, also much swelling at both angles of the lower jaw, extending upon the neck; swelling very painful; gums and mucous membrane exceedingly œdematous; many carious teeth; *fœtor ex ore.* Patient taken to the hospital and immediately operated upon (incision externally at the the fluctuating point). But little pus escapes. Temp., 38.5°; pulse good. Next day, pulse more frequent; temp. sinks to 37.5°; collapse; relative euphoria. Third day after the extraction, death from sepsis. Shortly before death infusion of salt.

CASE 3.

The following case was reported in No. 63 of *Zahnärztliche Rundschau,* 1893:

The patient, a merchant's wife, 43 years of age, had long suffered from toothache, but did not seek the advice of a dentist until profuse suppuration had set in. The dentist extracted the tooth and advised the patient to seek the advice of a surgeon immediately, since the ulceration of the upper jaw had progressed so far that there was imminent danger to life. For fear of an operation, however, the patient put off the visit to the surgeon till the following day. The incisions made having no effect in staying the progress of the disease, she was taken to a hospital where a more extensive operation was performed, which likewise proved in vain. Blood-poisoning having set in, death speedily followed under frightful tortures.

PYORRHŒA ALVEOLARIS.

BY F. T. VAN WOERT, M. D. S., OF BROOKLYN, N. Y.

Read before the Eighth District Dental Society of the State of New York, at the regular meeting held in Buffalo, February 26, 1894.

MR. PRESIDENT AND GENTLEMEN:

You could not have selected a subject for discussion this evening that would please me more, or one in which I am more interested. I have given the matter quite serious attention, the result of which is my entire conversion to the theories suggested in my paper before the Odontological Society of New York. The points that I then made are:

First. That necrosis of the alveoli never is present in this disease.

Second. The waste of bone is due to an absorption, the same as that which takes place after the extraction of a tooth.

Third. That the disease is confined to the peridental membrane, and the deposits and absorption of bone are a result, and not the cause.

Fourth. That the disease can be conveyed from one mouth to another through imperfect care of instruments, and such other means as our general operative work makes possible.

Fifth. The operation recommended by Dr. Riggs is productive of more harm than good, and should never be performed.

Sixth. There is no treatment now known that will entirely eradicate the difficulty, but I think the one recommended by me will go far towards holding it in check. Of one thing I am certain, if you adopt it you will never do harm—a point in its favor that the old treatment cannot claim.

It is not my purpose at this time to rehash what I have already said and written upon this subject, but my desire to impress upon you the necessity of all the details recommended forces me to some repetition, for which I ask your consideration. As well, kindly bear in mind that I am dealing with the local condition and its treatment, not the constitutional. Of the latter I know nothing, but the first being a mechanical, combined with very little of the chemical, comes within the scope of my understanding. Hence arises my confidence in what I am about to recommend as practical and feasible. Take for instance the first step recommended, that of freeing the teeth and surrounding parts from all food secretions, etc.; even setting aside the principal argument in its favor, the avoiding of infection, there is yet much to urge in its support. It is so much cleaner for both patient and operator; it leaves a clear field, so that everything can be seen in such cases. Even all this can be discarded and there is still left one of the strongest reasons for pursuing the course suggested, that of having the parts in a condition susceptible to the action of the medicaments used. Of what use would caustic pyrozone be if applied before this step was taken. Practically none—at least for the purpose for which I use it, so to cauterize the surface of the soft tissues that little or no hemorrhage may occur while removing the calcareous deposits, and to permit of washing the debris from them without a portion of the same clinging or becoming imbeded in the soft tissues.

The second recommendation, that of sterilizing the hands frequently during the operation, has the advantage of thorough cleanliness, if nothing more, and that is enough to warrant it. Finger bowls and an extra supply of napkins are necessary to the furtherance of the theory of perfect antiseptic treatment. The searing of the orange wood which is used to convey the tri-chlor-acetic acid recommended into the pockets and beneath the gum, is to prevent the laceration of the soft tissues by fine splinters that are liable to be formed in shaping the points, and the acid itself is to soften the deposits and cauterize the surface, without leaving a slough.

The instruments designed to remove the deposits are varied. Those recommended by Dr. Riggs are of value only when in the hands of men who have sufficient experience to use them without lacerating the soft tissues, or encroaching on the alveoli. Those devised by Dr. Allport are made upon the correct principle, and with slight modification would be the ideal for this operation. This change would not destroy the individuality of the instrument, but would make it a little more practical. These instruments are safe to place in the hands of the general practitioner.

while the first are not. The time has not yet arrived for the segregation of a specialist to treat the disease locally. In fact I doubt if it will be possible ever to separate it from the daily tasks we are called to perform in our offices.

In addition, I wish to give you a new method of removing the deposits. Three or four weeks ago I had a case that gave me a great deal of trouble, and after trying for a long time to cleanse from the parts the nodules, I was about to give up in despair, when it occurred to me that a chisel and mallet would be just the thing to start them. I set to work to adjust my Bonwill mallet for the purpose, and the results were so far beyond my expectations that I could hardly believe myself. I put a chisel of very small width in the mallet, and found that without the least danger of injury to the soft tissues I could chip off all the matter calcified upon the roots, and with less pain to the patient than by any other method with which I am acquainted. The same effects can be secured with the electric, or any mechanical mallet other than the automatic.

After treatment, the inflammation may not subside, yet if the parts are kept in an aseptic condition and free from these deposits, I doubt if you will find any absorption, or if the patient will loose the teeth. The principal difficulty arises from the lack of persistence on the part of the patient. He is so apt to think that all this attention is unnecessary, and will not come when told or sent for, but leave it until he feels a return of the uneasiness. The result of this will be very rapid progress of the disease and the ultimate loss of the teeth, while the dentist will get the blame.

The disposition of the young practitioner is to fear that he is not thorough enough in his effort to cut away the supposed necrosed alveolus, and he finally finds himself in the uncomfortable position of not knowing why he did not succeed, and a suspicion that he might just as well have kept the teeth in a comfortable condition for a long time, and not have caused his patient the suffering necessary to the operation so commonly performed. I appreciate our obligation to Dr. Riggs for his effort to place this matter before the profession, and I believe that had he lived we would have known much more of the disease than now, for so earnest a worker, so profound a thinker, and so careful an observer could not fail to discover the errors into which he had fallen. He gave us the start, and we should reverence his memory and accord him all honor, but we would be unjust to him and to ourselves if we accepted his teachings as absolute and final. To do this would stamp us at once as narrow minded and bigoted.

Where would we be to-day if the researches of the most advanced men of fifty years ago had been deemed entirely conclusive, and if all inquiry had then stopped? As we have progressed in the past, so we shall in the future, and when we grow old we may look back and wonder at the little acquaintance we had with the true science of our profession. It is the radical step that brings out the merits of an opposite theory, and this is my excuse for my present presumption.

In conclusion, I wish to read you a quotation from the *Medical Record*, in proof of my theory that all operations in dentistry should be performed with every antiseptic precaution.

"The defect in the dentist.—The dentists of America are the best in the world, but they are nevertheless away behind the mark. We appreciate their ingenuity, their skill, their drills and dams, their composite fillings and artificial teeth. They make the best kind of golden crowns, but they do not deserve to wear them. This is because they do not sterilize themselves, or teach their patients how to prevent caries. They are wonderful patchers-up of things half gone, but they do not show us how to prevent the going. There is hardly a dentist (there are a few) who works in an aseptic way or who uses aseptic instruments. Some do not know any better, some do not think it necessary. But both are wrong; the one class should learn, the other class should think. How many dentists can tell surely when they are dealing with a syphilitic mouth? Yet if such a mouth is being treated we do not believe that any one would like to be the next patient, though the dentist should first wash his hands.

"The mouth is a rich culture ground for microbes; and caries, it is taught, is a microbic disease. Yet the dentist is content to fill the teeth, then disburse a bottle of his own special mixture of chalk, orris and wintergreen, and tell the patient to brush the teeth *bis die*. The ordinary tooth brushing is entirely ineffective in preventing caries or disinfecting the mouth. For this purpose a genuinely antiseptic wash is needed, and this should be used for a considerable time. Just what this wash or powder should be, and just how long it should be used, is one of the things the dentist should find out. Let the American dentist devise a way of making the teeth and gums aseptic, and try to prevent caries. He will then be greater than if he had invented a new filling or a novel drill, or transplanted a whole jawful of teeth."

PYORRHŒA ALVEOLARIS.—*Continued.*

COMMUNICATION FROM C. N. PEIRCE, D. D. S., PHILADELPHIA, PA.

In writing, thinking or speaking of the subject "Pyorrhœa Alveolaris," the matter of first importance is to have it closely, definitely defined; without this limitation there is no certainty that any two are dealing with the same pathological condition. Observation and interpretation, then, must enter largely into an intelligent comprehension of the subject, and in the discussion it must be borne in mind that we have different abnormal states, which are liable to be spoken of as having a common origin because of the similarity in results, this necessarily leading to antagonisms and embarrassments.

Calcic pericementitis may have its origin at the gingival borders, the tartar acting as a local and mechanical irritant, with the train of concomitant evils, such as irritation, inflammation, formation of pus, and absorption of gum and alveolar process. This may be treated locally, and may be reported as a case of pyorrhœa cured, when the most that can be said of it is that it was the result of a local cause and has been treated and cured by topical applications.

To avoid such complications in diagnosis, let us first recognize the fact that we have three distinct, abnormal conditions affecting the gums, peri-cemental or alveolo-cemental membrane, and alveolar process. The first is gum inflammation and destruction, caused by a mechanical irritant —the salivary calculus of which we have just spoken. Second, inflammation of the gingival borders without the presence of tartar — Dr. Black's phagedenic gingivitis and pericementitis. The third is a pericemental irritation commencing at or near the apical extremity of the root, due to the presence of some morbid composite of the blood, exuded with the plasma and infiltrating the alveolo-cemental membrane, and frequently deposited or precipitated upon the root of the tooth near its apex. This latter I designated true pyorrhœa alveolaris, or hematogenic pericementitis, and so intimately is it associated with some other local manifestation of a gouty diathesis, that I have believed and do now believe it to be but another local expression of that systemic condition. This assumption has been confirmed by the fact that the accumulation which is so frequently found upon the roots of teeth near their apical extremity, by careful chemical analysis, has been proven to be composed of sodic urate, calcic urate, free uric acid crystals, with some calcic phosphate and carbonate. Nor is this the only evidence of the correctness of this theory. Cases which had been treated' for months, and indeed for years without more than modifying the progress of the disease have, when the patient has been subjected to rigid constitutional treatment, such as restriction in meat diet to simple albuminous food, with such remedies administered as are usually beneficial in gout or a uric acid diathesis, responded promptly — the inflammatory state with its concomitants, pus formation and process absorption, arrested, and if not too far progressed towards dislodgement, the teeth have become comparatively firm and free from pain.

I might in a few condensed propositions give conclusions which appear to me to be fully warranted:

First. The inflammatory stage of true pyorrhœa alveolaris primarily begins in tissues on the side of the root near the apical extremity, and secondarily advances towards the gingival borders.

Second. The cause of this inflammation, or pericementitis, is the plasma exudation from the blood vessels, freighted with salts, which in their deposition and crystallization upon the cementum of the root exert the influence of foreign bodies, and so act as irritants.

Third. The salts in question as disclosed by chemical analysis are calcium and sodium urates, free uric acid and traces of calcium phosphates.

Fourth. The chemical nature of these salts indicates a condition of the blood in which there is an excess of uratic salts and uric acid, due either to increased formation or imperfect elimination. The excess of these salts general pathologists regard as indicative of a faulty nutrition, and the immediate cause of a series of local disturbances to which the term gouty has been applied, the nutritional disturbance being known as the uric acid diathesis.

Fifth. Results from constitutional, in connection with the usual local treatment, in a number of well authenticated cases of pyorrhœa, have been so marked and satisfactory that the writer feels fully justified in his assumptions regarding the origin of the disease.

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PYORRHŒA ALVEOLARIS.—*Continued.*

COMMUNICATION FROM ALBERT P. BRUBAKER, M. D., OF PHILADELPHIA.

It would be superfluous for me to add any facts or arguments from the field of dental pathology which would corroborate the view that pyorrhœa is but a local expression of the gouty diathesis. I will therefore simply present a few facts taken from the field of general medicine, which will perhaps assist in demonstrating the dependence of pyorrhœa on a constitutional disorder.

At the outset, it should be made clear as to what pathological condition is embraced by the term pyorrhœa alveolaris. According to Dr. Peirce, and with him I fully agree, it is not that pathological condition which, beginning at the gum margins as a simple inflammation advances towards and involves the pericementum, and even leads to the formation and discharge of pus. This is a purely local condition, though capable of being aggravated by vitiated systemic states, established by the deposition of salivary salts, on the removal of which the inflammatory process subsides. This form of pyorrhœa is not to be confounded with that specific inflammation of the pericementum which begins at or near the apical extremity of the root, and which is attended by the formation of pus, the absorption of the alveolar process, and the eventual loss of the teeth. This inflammation is of constitutional origin, established by the deposit from the blood of specific matters, which chemical analysis has shown to be calcium and sodium urates and free uric acid. The chemical character of these salts is proof positive that their deposition is indicative of a constitutional or nutritional disorder. Owing to the difficulty experienced in removing this deposit, and also to the fact that it is as constantly being renewed, the inflammation and its concomitants have resisted all local treatment which has been employed.

It is this chronic, persistent, destructive form of pericementitis, which is to be regarded as an expression of the gouty diathesis. This differentiation of the pericemental inflammation into two distinct forms, one local, the other constitutional, must be clearly recognized in order to comprehend the pathology and treatment of the disease under consideration. That the pericemental membrane, the vitality of which has been lowered by mechanical or chemical agencies, may become the seat of uratic deposits, is in harmony with pathological processes occurring in other portions of the body.

The mucous membrane of the bronchial tubes, the vitality of which has been impaired by various causes, may become the seat of uratic deposits, which will give rise to a persistent inflammation, attended by increased and altered secretion, and which resists the customary therapeutic means and yields only to an anti-gout treatment. The mucous membrane of the pharynx, from the deposition of similar material, will become the seat of an inflammation which is characteristic. The gouty throat is easily diagnosticated. At times, small masses of calcium urate are discharged from the mucous follicles of the mucous membrane. Many other instances might be cited confirmatory of this view. Looking at all the facts, it is readily conceivable that the pericemental membrane is just as susceptible to uratic deposits as any other tissue, and that a gouty pericementitis (otherwise pyorrhœa alveolaris) finds its analogy in gouty bronchitis, gouty pharyngitis, etc. It is needless to say that in all these instances the patient was the victim of that perverted nutrition which is known by the term gouty. That this form of pyorrhœa, which Dr. Peirce regards as an evidence of the gouty diathesis, is so in reality, is demonstrated by the fact that the deposit is similar in all respects to deposits found in other tissues, the seat of inflammations long since recognized as of gouty origin.

The objection that patients suffering from this persistent pyorrhœa are not always gouty, is only valid when it has been proven that they are not gouty. The burden of proofs must rest with the objectors, in view of the facts which have been recited regarding the causation, and which will be adduced in reference to treatment of pyorrhœa. The common assumption that gout is but an inflammation of the joint of the large toe, or the joints of the fingers, is highly erroneous. This diathesis may manifest itself in a multiplicity of ways. Nervous disorders, cutaneous inflammations, visceral disarrangements innumerable may be established by the deposition of uric acid salts. The diagnosis of these gouty manifestations is only possible with those clinicians who have familiarized themselves with the protean character of this diathesis. It is a fair assumption, and one supported by observation, that the large majority of pyorrhœa patients present other symptoms of gout. A careful examination of the patient's physical condition, and an investigation into his family history, will frequently, if not always, disclose some gouty manifestations.

In dental as in general medicine, the specific character of any given pathological condition may frequently be inferred with a reasonable degree of certainty, from the results of specific treatment. If some obscure chronic inflammation which has resisted all forms of medication, should yield and disappear under the administration of quinine, mercury or colchicum, and the alkalies, it would be a fair assumption that the underlying cause of the morbid state was the malarial, syphilitic, or gouty diathesis. If a chronic inflammation of the pericementum, after resisting local treatment for months and years, should yield and disappear under an anti-gout treatment, the practitioner would be justified in regarding the disease as but a manifestation of gout.

Now, the facts which have been elicited by Dr. Peirce in the treatment of pyorrhœa absolutely support this view. An outline of the treatment adopted by him has already been published, and a detailed treatment with the result is forthcoming. It is only necessary for me to say that it is strictly along the lines of dietetic, hygienic and medicinal means, adopted by clinicians in the treatment of all forms of gout.

PYORRHŒA ALVEOLARIS.—*Continued.*

COMMUNICATION FROM JAMES TRUMAN, D. D. S., OF PHILADELPHIA.

So much has been written on the subject of Pyorrhœa Alveolaris, without any remarkable results following, that I should prefer not to enter the list of disputants, and therefore comply with the present request with some reluctance; for, in my judgment, it would be better to wait exact observations rather than risk possibly crude opinions upon a subject of as much importance as this may prove to be. The paper is, however, of such a radical nature that it invites discussion, and we are forced to meet it by, at least, past and present experience, or admit that the author's conclusions are correct.

The premise laid down by Prof. Peirce is, that we have, in the past, been laboring under a mistake, and that Pyorrhœa Alveolaris, instead of occurring as a single pathological condition, is, in fact, a dual presentation, and must be considered from separate standpoints, for he says:

"From a careful study of the abnormal pericemental, or rather the alveolo-cemental membrane, it appears to me that we must recognize two closely allied, but yet very different, pathological states; different, as I shall attempt to demonstrate, in their etiology, in their clinical history, in their symptomatology, and in their susceptibility to treatment. In one form of pericementitis, the origin of the calcic salt is the saliva, and in the other form the blood. The former I shall designate as ptyalogenic calcic pericementitis, expressive of the idea that in its origin it is local, peripheral and salivary. The latter I shall designate as hæmatogenic calcic pericementitis, expressive of the idea that in its origin it is constitutional, central, and associated with some modification of the normal composite of the blood-plasma."

As this view is so important I propose to examine it; for not only does it constitute the basis of his argument, but it is a wide departure from accepted conditions surrounding this disease. It is a well-known pathological fact that calcic deposits will not be made, in the majority of cases, in tissues, unless there be pre-existing changes present, indicating impaired function, or absolute death of the part. This being recognized as true, what must be the condition of the apices of the roots of teeth to admit the deposit upon their surfaces. The pericementum must have been in a state of inflammation through an antecedent irritation. This may have been produced by any of the usual disturbances, such as undue pressure, loss of pulp, etc.

It is, therefore, not an impossibility that deposits may occur at these points after destruction of the pericementum; indeed, it must be regarded as a very probable result in gouty subjects.

Before accepting this statement, admitting for the sake of argument that it occurs, it may be well to ask what are the phenomena attending this disease, Pyorrhœa Alveolaris, as generally understood. There is first an irritation of the pericementum, followed by a gradual destruction of that organ, and synchronously that of the periosteum of the alveolar process. The gum tissue is not primarily involved. The inflammation engendered by the progress of the disease produces pus. Microscopic investigations have proved the existence of pathogenic bacteria. Deposits may or may not be present; generally, in my experience, they are absent. When present, they are, in my judgment, of secondary importance, and cannot be considered essential to the progress of the disease. These constitute the main presentations at the gingivæ. If this disease be present at the apex of the same root, the manifestations and results must be similar in all respects. Pus must be the product of inflammation, and this will find an outlet. The final result is a fistula. Consequently, apical inflammation means, eventually, destruction of the adjoining tissue, or a condition known as alveolar abscess. If this be true, then the pathology of this disease is well understood, and needs no new nomenclature to explain it.

It seems to me to be impossible, and contrary to known pathological laws, that a deposit can be tolerated on a weakened membrane, or which will subsequently become devitalized by its presence, and the pulp still continue in full activity. When the subject is viewed in the light of experience, it has not been my observation that any such condition exists at the apical surfaces of teeth, except as a result of abscess, and then only in rare instances. Whether, in these, the calcic deposition will give, in all cases, the uric acid reaction, remains to be proved, and would require an analysis in every case to demonstrate it. Admitting that it could be demonstrated in every case, it by no means settles the question of the origin of Pyorrhœa Alveolaris, though we may be forced to admit it as one of the factors in its production.

The reasoning of Prof. Peirce, in regard to the channel by which uric acid arrives at the pericementum and through the cementum and dentine, is open to criticism. He says, "As the current of the lymph stream is directed for the most part towards the cementum, through its borders or periphery into the lacunæ and canaliculi, and finally in the reverse direction, it is not difficult to see why the deposit should take place on the surface of the cementum as well as in the meshes of the alveolo-cemental membrane. The constant deposition and pressure of these insoluble salts will act as irritants, engendering the well-known inflammatory states, congestion, exudation, impaired nutrition, tissue disorganization and the formation of pus. These changes taking place here as elsewhere in the immediate vicinity of the irritation—that is, on the cemental aspect of the membrane—leads to its detachment from the cementum and the development of a pus pocket."

When this quotation is analyzed, it represents the lymph stream holding the urates in solution, as passing into the lacunæ and canaliculi of cementum, without, apparently, affecting the tissues in transit. On their return, in reverse order, the stream gives up its calcific material, and the precipitation and crystallization results in irritation. As I have endeavored to show, there must be some loss of power or impairment of function for this deposition to take place; it is reasonable to infer that if the tissue retains full vitality there would be no formation of calcic deposits. But Prof. Peirce does not seem to regard this as an important pre-existing condition, though he does admit that there "might co-exist some impairment of nutrition or some faulty enervation." If this be not important, then it is difficult to understand why the deposit is not made before the transit through the pericementum. Why must the lymph-stream take such a circuitous route before it can effect the lesions described? If the urates be the irritants asserted, and impairment of nutrition is not absolutely essential to their deposition, no reason remains why the tooth should not go down to destruction as a whole, and not by degrees, as I believe to be universally the case.

In the discussion of the paper, and pratically part of it, Prof. Peirce makes the statement, that "this disease (pyorrhœa) is not known to be developed, except in very rare cases, until after thirty or thirty-five years of age," and he reasons from this that as the "uric acid diathesis is not established until after thirty-five or forty years, we would not be likely to find any such condition in our young patients for whom we correct irregularities." This, by direct implication, means that there is a marked synchronism in these two pathological states. Unfortunately for this reasoning, pyorrhœa is not confined to thirty years of age, but is found very frequently in persons before the twentieth year; in fact, it is a question whether the age limit can be applied. It is true that after thirty-five the destruction is greater and the disease more deeply pronounced.

"In one form of pericementitis (pyorrhœa) the origin of the calcic salt is the saliva, and in the other the blood," is the rather positive assertion of Prof. Peirce. At this stage of the inquiry it might be well, before ascribing a similar origin to both forms, and both arising from calcic deposits, to establish the fact, if fact it be, that such deposits originate the lesion in any considerable number of cases. If by naming that originating from saliva, ptyalogenic calcic pericementitis, and that from the blood, haematogenic calcic pericementitis, he means to assert that pyorrhœa alveolaris is invariably produced by calcic deposition, then equally as good observers must part company with him in his conclusions, for calcic accretions from the saliva, it is very safe to affirm, are not the cause of this disease. It is only necessary to refer, by way of illustration, to those teeth most affected with what he terms ptyalogenic deposits and mark the result. Examine the lingual surfaces of the inferior incisors and canines, and though ever so much coated with hard, black tartar, pyorrhœa does not result, and the same is equally true of the superior molars; indeed, as I understand the disease, it would be impossible for it to take place as long as salivary calculi were present.* If this be true of this character of calcic depositions, and it seems to me it cannot be controverted, then it remains equally true that the so-called hæmatogenic calculus can have no direct effect of a destructive character not possessed by the salivary calculus. Both alike destroy the soft tissues upon which they impinge, but neither, in my opinion, have any direct action in producing the disease in question.

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*I do not wish to be understood by this statement that pyorrhœa does not occur on teeth upon which salivary calculus is deposited, but that it does not originate beneath the accretion.

The position held by Prof. Peirce is that local treatment is practically unavailing, as it should be if his premises be correct, but inasmuch as pyorrhœa alveolaris has been and will continue to be overcome by local treatment, it follows that the uric acid hypothesis does not cover all cases.

When it is understood that in dealing with this disease our diagnosis cannot be limited to a circumscribed area, but must have a wide consideration of related systemic conditions, I am forced to agree with the conclusions of the essayist, that lesions of the gingivæ may be indirectly aggravated by constitutional disturbances. However, it remains to be proved that gouty subjects are, above all others, liable to this disease, and that to gout can be accredited the origin of these peculiar pericimental inflammations. All disturbances of the normal equilibrium of the system will produce derangements of various organs, and a local irritation may be the progenitor of a series of new foci of inflammation.

A strict parity of reasoning would force the conclusion that if the hypothesis of Prof. Peirce be the correct one, then we can equally ascribe the origin of pyorrhœa alveolaris to other disturbing elements. In scurvy and syphilis, the pericementum is destructively affected, and under proper constitutional treatment will disappear, precisely as it is stated pyorrhœa will disappear under proper treatment for gout. Certain medicines act in the same way, and mercurial salivation is so well known as to need only passing reference. The reasoning that would apply the origin to uric acid deposits holds good equally for scorbutus, syphilis, and mercurial salivation.

It must be recognized that pathological conditions affecting the system will have a marked impression on the tissues investing the teeth, and in addition to this, create changes in the secretions of the oral cavity, from the normal neutral to an increased acidity, thus locally intensifying the disease.

True pyorrhœa cannot, in my opinion, exist anywhere except upon the pericemental membrane investing the cervical portion of the tooth. It has its origin, if I understand it, in irritation of that membrane, and may then progress, the factor of vitality having much to do with the rapidity of the destruction. The immediate and continuing cause of the inflammation is micro-organisms. As a rule, deposits are not found in the pockets. Prof. Peirce explains this by supposing that pus washes them out. If removed immediately, how can the parts be affected by their temporary presence?

Whenever differences arise in regard to the character and treatment of pyorrhœa, the charge is almost universally made that those in opposition to any special ideas are incapable of diagnosticating the disease. It would be a sad commentary on the intelligence of the dental profession if this were true; but it is not true, for the reason that the very simplicity of the disease precludes such an inference. I am, therefore, forced to the conclusion that the marked differences of opinion cannot be attributed to a lack of knowledge of the etiology of this complaint, but rather to improper conceptions of treatment demanded.

The object of this review is not to give my own methods to meet these conditions, for this would be unnecessary, they having been published elsewhere, but as teeth have been permanently cured, and that without any resort to systemic treatment for gout or other constitutional diseases, it seems reasonable to conclude that the origin of pyorrhœa cannot universally be looked for in derangements of the general system.

In conclusion, I briefly give the following summary of my views regarding the matter:

First. Pyorrhœa does not occur at the apices of roots as a distinct pathological condition.

Second. Deposits may be found there, but always subsequent to the death of the pulp and pericemental membrane.

Third. That uric acid may affect the membrane subsequent to the injury of that tissue, but is not directly the producing cause of lesions in that organ.

Fourth. The action of syphilis, scurvy, certain medicines and general constitutional disturbances, have a similar effect to invite this pathological state.

Fifth. Pyorrhœa alveolaris is finally a local disease, aggravated by systemic conditions and to be treated upon a clear comprehension of its local and constitutional complications.

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PYORRHŒA ALVEOLARIS.—*Continued.*

COMMUNICATION FROM S. H. GUILFORD, A. M., D. D. S., PHILADELPHIA.

In undertaking to express my views upon the subject under consideration, I regret that I have neither any new ones to present nor novel methods of treatment to offer. In common with other busy practitioners, it has been my lot to encounter more cases of this disease than I cared for, and to meet with less success in its treatment than I had hoped to obtain. The insidious character of the disease and its seemingly growing prevalence, certainly lay upon us, as professional men, an increasing obligation to try and fathom the mystery of its etiology, in order that our remedial measures may have a scientific foundation.

The first one, so far as I know, to give this disease anything like the attention it deserved, was Dr. Riggs, who, while he paid little attention to its etiology, deserves great credit for the assiduity with which he labored for the amelioration of the condition, and the success which attended his efforts.

His treatment was largely mechanical, but it was a long step in the right direction, for it not only afforded relief from suffering, but measurably checked the progress of the disease. The removal by instrumentation of the only apparent cause of the trouble, was the best treatment that had been suggested, but it fell short of real efficiency, because the remote cause of the trouble had not yet been discovered, and all treatment was therefore palliative rather than remedial or preventive.

We were aware of the calcareous nature of the deposit on the roots of the teeth, which was the immediate cause of the disease, and also recognized its general similarity to the calcic deposit found upon the crowns of teeth, but it was left for Ingersoll and Black (one or both) to determine that it was a deposit from the blood, and that any means adopted for its prevention must deal with causes of a constitutional character.

Following up this line of investigation, Prof. Peirce has lately advanced the theory based upon analysis of the deposit, that the primary cause of the disease is a uric acid diathesis. His analysis showed the presence of the urates of calcium and sodium, in addition to the phosphate and carbonate of lime, which make up the bulk of all calcic deposits. As these salts are similar to those found in the exudations of gouty subjects, he very naturally concludes that the origin of the two diseases, gout and pyorrhœa alveolaris, is identical, and in each case is due to an excess of uric acid in the blood plasma.

Now, while there is a degree of plausibility in the theory as set forth in the *International Dental Journal* for January of this year, it lacks confirmatory evidence in several particulars. In the first analysis given, only three specimens had been examined, and of these but two showed the presence of uric acid in any appreciable quantity. In the second analysis, made by Prof. Brubaker, some six or eight specimens were examined, in three of which only, urate of soda crystals were found. It will thus be seen that at most, but eleven specimens had been examined, and of these only five, or less than one-half, gave positive evidence of the presence of urates. Certainly the number of analyses was entirely too small upon which to base a theory, and their results too unfavorable to serve as confirmatory proof.

In describing the difference between seruminal and salivary calculus, he speaks of the former as being constitutional, and the latter local in its origin.

Now, to my mind, if one is constitutional the other is also, for the saliva must receive its calcic constituents from the blood, since there is no other source from which they can be derived. Both forms of calcic deposit, therefore, are derived from the blood, the one directly and the other indirectly through the medium of the saliva, and the experiments would have been more complete and of greater value had both varieties of the deposit been examined for urates. It is possible that they would have been found in each, and in such event would hardly have been considered confirmatory of the theory advanced.

If it should be granted or proven, however, that the exudations and deposits are the same both in gout and pyorrhœa, and their origin similar, we ought to find the two diseases, or rather the two manifestations of the same disease, commonly associated in the same individual. Is this the case? Although Prof. Peirce and certain others think they have noticed this relationship, we seriously doubt whether it exists in many cases.

That both should be found occasionally in the same individual is not to be wondered at, for gouty manifestations are far from uncommon, and pyorrhœa is multiplying its victims very rapidly, but two diseases of totally different origin are frequently found in the same individual. To prove a common origin they would both have to be amenable to the same line of treatment, and until the identity of the two conditions is thus established, we must class ourselves among the doubters or unbelievers in the theory advanced.

In all the cases of pyorrhœa that have come under my observation, I have failed to find one in which gouty manifestations were certainly present.

The experience of others in this respect may be different from mine, but having lived to see so many theories based upon a slender foundation first accepted, then investigated, and finally disproven and discarded, I, for one, have come to the point of requiring for the acceptance of any new theory a stronger array of facts and confirmatory evidence than has been presented by Dr. Peirce in support of his hypothesis.

PYORRHŒA ALVEOLARIS.—*Continued.*

COMMUNICATION FROM R. R. ANDREWS, A. M., D. D. S., CAMBRIDGE, MASS.

The request for my views regarding Prof. Peirce's article on Pyorrhœa Alveolaris, as published in the January number of the *International Dental Journal,* has been received. I hardly know what reply I should make. I do not profess to be a specialist on this subject, although I am greatly interested in it. Recently, I have given some attention to the microscopical examination of sections of roots of teeth lost by reason of this disease. I wish carefully to study the very marked change in the character of the dentine of the root, and I should be obliged to any members of the Eighth District Dental Society who would aid me in this investigation. If they can send me teeth which have been lost from this cause, in diluted alcohol,—placing them in this just after extraction, before they have become dry,—together with a short history of the case, it would materially help me. I have made a number of sections of these teeth, but want more for comparison. We are to be congratulated that at last we have been thoroughly aroused to the importance of knowing more about this most perplexing disease—Pyorrhœa. Indeed, Prof. Peirce's article is claiming the attention of the whole profession, and this must necessarily give us results which will lead up to a more successful treatment.

I do not know how many cases of true serumal tartar from different teeth, taken from the apices of the roots, have been carefully analyzed. If the number should be large, and all show traces of uric acid and its salts, it must necessarily go a great way towards settling this theory. The concretions which we find on the palatal portion of the upper incisors, just under the gum, and on the palatal roots of the molars in the mouths of comparatively young people, I have always considered to be one form of serumal tartar. Some of our oldest and best operators make the statement that patients of whom they have had the charge from youth up never contract this disease, although their parents may have lost their teeth by it. Proper care at the proper time has prevented its occurrence. These practitioners are loth to believe that this tartar is from the blood, being deposited before pockets are formed. Gouty and rheumatic people among my own patients have not, as a rule, been more troubled with this disease than others. I have not given the uric acid theory, advanced before Prof. Peirce came on the field, much consideration, but the analysis showing the actual presence of uric acid in this deep-seated tartar, demands serious consideration and careful investigation. If we go at this work in the same careful manner as that pursued by the worthy President of the New York State Dental Society while investigating this subject, we shall soon settle the question whether concretions of serumal tartar can exist upon or near the apices of roots of teeth, without a break in the continuity of the gum tissue at its gingival border. I have held there could be no deposit, not even of the nodular tartar, without an inlet from the gum to its location.

This is one of the important things that we must prove, and Dr. Van Woert's method is the only proper way to investigate. We must look for its solution at dissecting tables, and at autopsies. We must interest the students of the dissecting room, both dental and medical, and before a great while we shall have facts that will give us the exact truth. Another question arises: shall it be possible by any system of medication to dissolve this deposit from the roots of teeth, in its earlier stages, before the pockets are formed, while yet there is more or less irritation? I do not believe this to be possible.

I have been led to believe, from my own experience, that this trouble exists largely in those accustomed to luxury — people above middle age, who over-eat and under-work. If intelligent medication, with the end in view of eliminating uric acid from the system, and with the proper diet for preventing its formation, shall be followed by a cessation of the symptoms and the trouble itself, it must necessarily prove the accuracy of Prof. Peirce's hypothesis. Enough has been shown to make it the duty of every conscientious operator carefully to carry out this scheme of medication, and after proper time report the results to his society.

All the care that has been given to the removal of tartar from the roots heretofore, together with the thorough use of antiseptics, must be continued, with the additional medication suggested. This theory of Prof. Peirce appeals to every one of us; it sounds rational, and seems the most plausible solution of this difficult problem that has been offered.

Prof. Peirce calls our attention to one very important fact, and that is that disturbed functional activity causes the deposition of the uric salts in the tissue of the pericementum, and any undue irritation, even the simple wedging of teeth, may start up this trouble. If this danger signal shall stop many of the younger members of our profession—and some of the older ones, too—from the excessive use of the wedge, it will prove a great blessing to suffering humanity, and perhaps save their teeth from "hæmotogenic calcic pericementitis."

PYORRHŒA ALVEOLARIS.—*Continued.*

COMMUNICATION FROM EDWIN T. DARBY, M. D., D. D. S., OF PHILADELPHIA.

I am not yet prepared to commit myself to the theory which Dr. Pierce has advanced as the cause of pyorrhœa alveolaris. I am free to admit that he has made suggestions which look wonderfully reasonable, and I shall not be greatly surprised if, before many months shall have passed away, additional proof will be furnished which will confirm his theory. As yet, he has not proven that uric acid is always present in the deposit to be found upon the roots of teeth in which pyorrhœa alveolaris has been known to exist, nor has he proven that uric acid is not present in the mouths of persons who have no disease of that character, or in whom there is not known to exist a gouty diathesis. Of late, the disease known as gout is made to stand as god-father and sponsor for so many conditions, that I sometimes fear we may overreach the mark, and make it appear that nearly all of our imperfections are the result of the uric acid diathesis.

The medical profession of America is recognizing a peculiar condition of things in the American people, which does not exist to the same extent in any other nationality, and which is doubtless the result of our mode of living, and which they have denominated "American gout." It is not the gout of England, which it has been thought was the result of port wine and beef, and which began in a man's big toe and made him wish himself dead, but it is the gout of malnutrition, and is the result of a nervous exhaustion from over-work and under-feeding. I do not mean by this that food enough does not enter the system, for it does; but it is the inability of the system properly to appropriate that food, no matter what the character of it, that loads the system with uric acid. So far as I can learn, this has never been found in the saliva, hence it would not be found in salivary calculus, but it is nearly always found in the blood of gouty subjects, and it might be found in the serumal deposit at the apex of the roots of teeth which have been lost by pyorrhœa alveolaris. I am strongly of the opinion that Dr. Pierce is right, and I am also of the opinion that his description of the progress of the disease is the correct one. Pyorrhœa alveolaris is not a disease beginning at the gingivæ, and the result of a local irritation, but a constitutional condition, and I trust that we shall soon know that it is accompanied with a gouty diathesis.

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PYORRHŒA ALVEOLARIS.—*Continued.*

COMMUNICATION FROM S. G. PERRY, D. D. S., OF NEW YORK CITY.

I put myself on record ten years ago last spring, before the New York Odontological Society, as believing that micro-organisims were one of the most important factors in the spread of pyorrhœa alveolaris. There were many smiles at my expense at the time, but I have never for a moment since had reason to change my belief.

Of course, I do not claim that they are the original cause of the trouble, but when the condition is once established I believe they become very important factors. The whole profession unconsciously confirms this when they use antiseptic remedies of any kind.

The marvelous success of modern surgery is due in great measure to the adoption of what might be called Listerism. I do not believe there ever can or ever will be health in the human mouth without the application of the same principle.

I risked my reputation in stating my confidence and belief in this germ theory, not from any positive knowledge acquired by experimental methods, but by the application of common sense. It seems to me that Prof. Peirce's idea has a great deal to commend it in the same way, because any one who has watched the drift of recent medical literature, or who has been much in contact with advanced medical men, must know that diseased conditions arising from an excess of uric acid manifest themselves in the greatest variety of forms.

Remembering that pyorrhœa, like gout, does not appear until about middle life, and that both to a certain extent are inherited, and both are susceptible to alleviation by proper treatment, but neither positively curable, gives, it seems to me, a sufficient basis on general principles for the tentative acceptance, at least, of Dr. Peirce's theory. If it proves to be absolutely false, the agitation of the question can do no harm, but must do a great deal of good, for I believe there are not many people who have reached forty years of age who do not suffer in one way or another from an excess of uric acid, and who would not be benefited by a correction of diet and general habit of life. That erosion is due to an excess of uric acid I have not a shadow of doubt. I tried to make that clear in a paper written about a year ago.

If there is any inconsistency in attributing pyorrhœa to the same cause, it seems to arise from the generally admitted fact that erosion is accompanied by a somewhat acid condition of the mouth, whereas, pyorrhœa is attended by one distinctly alkaline. And yet this may be a bold assumption, for I am not aware of the existence of any series of careful experiments in confirmation of the statement. The chemistry of the mouth is so little understood, that it is becoming in us to be careful in making positive statements.

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PYORRHŒA ALVEOLARIS.—*Continued.*

COMMUNICATION FROM R. OTTOLENGUI, M. D. S., OF NEW YORK.

I have been requested to send you my ideas upon pyorrhœa alveolaris, viewed from the standpoint of an article by Prof. C. N. Peirce in the *International* for January. In the same number of the journal I find an article upon the same subject by Dr. F. T. Van Woert, together with the discussion of his paper, and in the February number I find the discussion of Dr. Peirce's article. With your permission, therefore, I will take up the subject from the standpoint of the papers and discussion found in both numbers of the journal.

It is no new idea that pyorrhœa is attributable to a systemic rather than to a local cause. More than ten years ago, Dr. Wm. H. Atkinson, when treating these cases, prescribed constitutional remedies, cinchonnidia being one of his dependencies. The new thought in the paper by Prof. Peirce is, that uric acid is a primary cause in the production of the worst form of this disease. To Dr. Peirce we must give full credit for his published work, and for the series of investigations and experiments that have led up to it. If I mention, therefore, that this idea is not a new one to me, it is not to lessen the value of what Prof. Peirce has given us, but it is rather to show that what opinions I may express may have more value than were it true that it has only been since a few weeks ago that I have given this matter thought.

I think it is fully five years since Dr. M. L. Rhein first told me that in his opinion there was a close relationship between the most aggravated (and I may say aggravating) form of this disease, and the gouty diathesis. From that time I have been seeking for histories which connect this disease with the gouty complaints. I also know that during this time it has been a frequent habit of Dr. Rhein to have examinations of urine made, where the disease was conspicuously present. I regret to say that I cannot give any results that he has deduced, nor would it be proper for me to anticipate what he has the right to publish as his own.

I will only mention in relation to what I have observed myself that, whilst I have no clinical facts to offer, it is true that, while I accepted Dr. Rhein's view as probably correct, I have been unable to verify the fact. I have questioned over one hundred persons afflicted with virulent pyorrhœal conditions, and the number who have admitted that they had suffered from any form of disease attributable to gouty diathesis, was not at all commensurate with the number we would expect to find, were this the true and only explanation. However, it is quite possible that even those cases in which there was no known history of rheumatic tendency, uric acid may have been the most important factor in causing the local symptoms about the teeth. What more I could say would be conjectural, and therefore unprofitable. I am inclined to view the theory as probable, but it is scarcely time for its free adoption. There is too great a tendency among dentists to adopt every new idea, and the result is that many so hastily accepted must eventually be discarded. I think that Prof. Peirce is working in the right direction. I believe that he has the ability to pursue the subject to a satisfactory and conclusive end, but it will be wise to wait awhile before announcing to our patients that at last we know all about it.

I would next like to say a word about terminology. Pyorrhœa alveolaris is a bad name. It is indefinite, and almost meaningless for the purpose to which it has been applied. But there is this in favor of it:

It is already well known to a vast number of laymen. It is not at all uncommon for me to have new patients ask me to examine their mouths to see if they have pyorrhœa. They usually use the one word, which is significant. The public want simple names for their diseases. Since there is no other part of the body which is afflicted with pyorrhœa, it is clear that the explanatory word alveolaris is unnecessary. Therefore, I would favor the adoption of the name pyorrhœa as a designation for the class. Next we recognize that there is more than one form of the disease, and I am not sure that there may not be more than two distinct forms, with different etiology. I do not favor the names proposed by Dr. Black, nor do I like those suggested by Prof. Peirce, but I cannot offer any better. Perhaps it might do to call the worst form serumal pyorrhœa, and the other salivary; but I do not really advocate this, because it is still to be decided what part the deposits play in the disease, there being no doubt in my mind that it may exist in its most discouraging form without deposits either from the blood or from the saliva.

From the realm of my experience I will endeavor to describe some distinct forms of the disease, as I have seen them, together with concomitant peculiarities. We frequently hear of men who effect radical cures of pyorrhœa. I doubt very much that these men have done so. I have listened over and over to their histories of such cases, and I have read reports that have been printed, but almost invariably I have been impressed by the thought that these men have been incompetent diagnosticians. To them any ooze of pus from the pocket around the neck of a tooth is a true case. Why not? Is it not pyorrhœa alveolaris—pus from the alveolus? But however poor they may be as diagnosticians, we cannot deny the honesty of their reports. Therefore, we must recognize that there is a pus generating disease, which is curable.

I should not include this in the class which I would denominate pyorrhœa, or if I did, I should call it gingival pyorrhœa; for first, it is a disease confined strictly to the gingivæ, and second, it is not caused by calcic deposits, though the deposits play an important part, as I shall describe.

Gingival pyorrhœa, (to use the term as a temporary designation for the purposes of this paper) is really a gingivitis which has been neglected until a suppurative stage is reached. This suppuration may result in two ways, or may be caused by both together. The first appearance is a localized but well marked inflammation, confined to the gingival pedicle which lies between the teeth. For a long period it will extend no further, and there will be a well defined line which appears to separate the inflamed from the normal tissue. This line will be just below one drawn across the highest point of the gingival arches. If the patient notices the disturbance at all, the report will be " my teeth bleed when

I clean them." In this stage the disease is not difficult to control. Nightly applications of glycerole of tannin will accomplish much. In time the inflamed territory expands, and the disease spreads along the arch of the gingiva, until the whole of the margin of the gum is involved. Then the gums appear turgid and swollen. They also become rough and loosely bind the teeth. A sort of pocket is formed and deposits are invited. These in turn add to the trouble, until we find them exerting an irritating influence which ends in a purulent condition. Or where deposits are not made, the gradual degeneration of the vitality of the part will result in pus. In these cases pus may be abundant, but the pocket will not be deep, and the pericementum is not at all involved. Of this I am positive. When the pericementum is involved, then I would say that from gingival pyorrhœa we have supervening the condition which I have denominated salivary pyorrhœa. I do not mean that this second form always originates in a gingivitis, but where a gingivitis is present we have a fruitful soil for the grafting of the more dangerous malady.

The salivary pyorrhœa, then, is where salivary calculus is found about the necks of the teeth, with pockets extending up and encroaching upon the area originally occupied by the alveolar bone, and from these pockets we expect pus. This condition I would include among those possibly attributable to uric acid, though the next is more probably so.

Where the disease is solely serumal pyorrhœa, we would argue that salivary calculus was not necessarily present at the initiatory period. The deposit has been made at or near the foraminal end of the tooth, and the subsequent pocket has been formed by the burrowing of the pus which has accumulated as a result of irritation. I am inclined to believe that in these cases the serumal deposit is not a mere incident of the disease, but that it is the primary lesion. If not, then we must imagine that the disease exists first; that we have pus accumulating at the end of the tooth and burrowing its way outward until a pocket has been formed, and that the serumal deposits occur afterward. Now, who can truthfully report such a condition? We have seen pus discharges where no deposits exist, but who, seeing this, can assert that deposits of one kind or the other have not existed prior to the examination made by himself? Personally, I have never noted such a condition, except when instead of a well defined pocket, there has been rather a well marked separation of the soft tissues from the tooth itself, with a dissolution of the bone; and invariably I have observed that the pockets do not reach the end of the root, except in the final stages, when extraction becomes almost an immediate necessity. The serumal pyorrhœa, then, in my opinion, begins when the deposit is made at the end of the root.

But next we have complex conditions. The serumal pyorrhœa may become engrafted upon the salivary. That is, the saliva may deposit calculi first, and in an advanced stage of that disease we may have serumal deposits occurring. Contrarily, the serumal deposits may present first, and after a pocket has been made, it is easy to imagine the salivary deposits ensuing. Whichever way the final condition may come about the result is the same, a combination of both diseases. That uric acid is an operating cause here, is more probable than with any of the other conditions.

By what name shall we designate that other dreadful form, where no deposits are present? Once more, maintaining my point that the pocket begins at the neck of the tooth and increases toward the end of the root, I will ask you to consider the following explanation of the disease. Any condition of health which will deplete the system and cause anæmia, will superinduce a condition about the teeth favorable to the advancement of this form of pyorrhœa. As a local degenerator, I would point to excessive smoking. The constant high temperature may be said to cook the soft tissues to a point where their vital resistance is materially lessened. There is a normal waste of tissue in all parts of the body, because of use. This waste is restored by vital processes of reorganization, and where the vitality is sapped, we can easily imagine a general depletion ensuing, with lack of reparative energy. The soft tissues, and also the bone about the teeth, slowly waste away. The gums shrink. They do not recede at first, but they atrophy, their bony support having also melted away. Pus follows.

In this condition recession begins. This recession is more marked about the superior molars, and on the palatal side. This is due to the lack of resistance offered to the action of the tongue when pushing the food between the teeth in mastication. The force thus exerted wears away the soft tissues at these points. We may or we may not have pus, and its presence is possibly due to bacterial infection. It is well known that bacteria may be present and do no harm, until the time when the vital resistance is lessened, or the temperature increased to a point conducive to their propagation. The first condition we would get in either sex from any constitutional ailment resulting in anæmia, and we might have both where the smoking habit was excessively indulged in. What part the nicotine would play as a germicide, and how it might act as a virulent poison, are points worthy of study. These cases, unpromising as they appear, are exactly the ones which often result in what seem to be marvelous cures. If the general health of the individual is restored, either by medical aid or by change of scene and habit, the local disturbance not infrequently will disappear, and though the gums and much of the bone have been lost, the teeth become firm again.

I have already written much more than I at first intended, and I must therefore allude rather briefly to the points in Dr. Van Woert's paper which attract my attention. He tells us that necrosis is not an accompanying symptom of pyorrhœa, while it has been long claimed that it is. It seems to me that the advance made by the doctor's investigation is more imaginary than real. It may be that technically he is right, and that true necrosis is not commonly to be found in this disease. But there is no doubt that there is a destruction of the alveolar bone, and whether we call it necrosis, caries, dissolution, or absorption, is of small consequence. I would take issue with him, however, where he likens the process of destruction to what he calls the absorption of bone which follows the extraction of the teeth. He has made sections of the bone to prove his point. But I too have made sections of bone, and where but one tooth has been extracted, instead of any absorption of the bone, I have found rather an obliteration of the tooth socket by a deposition of new bone, which is more cancelous than the normal process. Absorption of the alveolar ridge is commonly found only when several teeth have been taken from one locality, and is subsequent to the healing process, or if coincident with it, it is due to the fact that the mechanical destruction of bone has been great enough to allow a collapse of the remaining walls, so that when healed the ridge is shortened. But in pyorrhœa we have a distinct destruction of the bone, which if asked to denominate I should call carries, due to the presence of pus and pressure therefrom.

This brings me to a proposition which I have not seen considered, and which I offer for your future observation and study. My question is, whence the pus which accompanies this disease? Is it from the pericementum, or is it from a true pus generating tissue which replaces the lost alveolus?

In many cases I have been tempted to believe that the latter is the case; that the pus exudes from the soft tissues overlying the root, and not from the pericementum. If this be true, then we cannot use the term pericementitis. I do not mean that pus never comes from the pericementum in these cases, but that in the worst cases it comes chiefly from an opposite direction.

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PYORRHŒA ALVEOLARIS.—*Continued.*

COMMUNICATION FROM M. L. RHEIN, M. D., D. D. S., OF NEW YORK.

That a very common type of pyorrhœa exists as a result of the uric acid diathesis, is not a new doctrine by any means. Cases due to such causes have been treated in a constitutional manner for many years.

If Prof. Peirce intends in his latest papers to set up the claim that all the cases of genuine pyorrhœa have this source, I must differ with him. I do not, however, understand him in this way, but merely that he has picked out one of the most frequent causes of the disease, and endeavored to prove by chemical analysis of the deposit on the root, that it is a result of the faulty metabolism of that particular system.

Has he proven to our satisfaction that such patients have uric acid in some form on the deposits, and that patients free from pyorrhœa have no traces of uric acid in their salivary deposits?

I am in doubt at the present time how to answer the question. A half dozen birds will not do for a flock, neither will a few isolated chemical tests definitely determine a disputed point in pathology. My own views of the subject would naturally tend to induce me to give the firmest adherence to his belief, that an exudation of urea in rheumatic or gouty subjects would proceed through the pericemental tissues. Can we not find this same exudation of urea in comparatively healthy people? I am also not prepared to answer this question; except that if any one chooses to place firm reliance in the three uric acid tests stated by Prof. Peirce in the January number of the *International Dental Journal*, then that same party will be obliged to form the opinion that uric acid is a natural constituent of all calculary deposits on roots of teeth, because the test No. 2, the dry or destructive distillation test, will produce its result—free ammonia gas, NH_2—on any specimen of calculary deposit that may be used from the healthiest of mouths. The truth of the matter is that this is not a fair test, for it is impossible to obtain deposits around roots which will not contain more or less organic matter, and, as a result, there is present nitrogenous matter which will invariably give out the ammonia fumes. Finding one of Prof. Peirce's three mainstays as weak as this, it behooves us to corroborate his experiments with care and multiplicity, before we ought to come to a just conclusion as to whether uric acid is found in some calculary deposits and not in others.

I am working very earnestly in this field, and although not prepared at this moment to formulate my own views, yet I feel constrained to say that I do not attach the importance to Prof. Peirce's paper which it has received, especially in this month's *Dental Cosmos*.

The general attention which it is receiving at the hands of the profession, is due to the majority of dentists knowing so very little about how to make a differential diagnosis in diseases of the oral tissues. We have no right to undertake the treatment of a case of pyorrhœa alveolaris, without first subjecting the patient to an examination so careful and critical that the condition of the vital organs are clearly set before us. Such an examination, properly made, will certainly bring about a proper diagnosis of that particular case, and if we find the urine loaded with urea products we can safely write in our record books "pyorrhœa rheumatica," but no more safely than we can in another case write "pyorrhœa diabetic," or "pyorrhœa pericardial," etc., etc.

In plainer words, my investigations have led me to believe that the etiology of pyorrhœa varies, depending on any disease that is powerful enough to bring about abnormal metabolism, and as we have pus exuding in all these cases, the most appropriate nomenclature is to retain the word pyorrhœa, adding as its adjective, the disease which is the direct cause of the perversion of the nutrient function.

When Prof. Peirce states that in these hæmatic types, the deposits commence on the end of the root and proceed to the neck of the tooth, he makes a remarkable assertion; he offers no proof to back it up, and it is contrary to the observations of all my friends with whom I have discussed the subject. Many cases have come under my notice which at first glance would tempt one to say this deposit has commenced at the end of the root, but a more careful examination invariably caused me to change my mind.

To close, I would say that with me the question of etiology is not one in dispute, and I only regret that all of the profession have not eyes opened wide enough to see clearly. There is, however, a vital, burning issue in the treatment of pyorrhœa, and it consists ot this: "How shall we restore lost tissue?"

AN ADDRESS TO THE STUDENTS OF THE DENTAL DEPARTMENT OF THE UNIVERSITY OF BUFFALO.

BY E. D. DOWNS, D. D. S., MEMBER OF THE BOARD OF CURATORS.

Being called to Buffalo, your Faculty has invited me to say a few words to you. I do not know that I ever undertook anything more embarrassing, because I am well aware there are no more severe critics than the average dental students, who are having both hand and brain simultaneously trained—for you undoubtedly know that educators are recognizing the value of manual training in the development of the brain.

Moreover, since I received this invitation, I have remembered with some concern a little incident in my own college days. A gentleman who was addressing us held forth for what we thought an undue time; so we removed our overshoes from our feet and cast them at his head, and it seems to me that this room offers unusual facilities for hitting the mark.

I suppose you all know that I am one of the Board of Curators, and consequently look upon me as a natural enemy; but you are mistaken, I assure you.

When you come to be full-fledged dentists, and are members of dental societies, as I hope every one of you will be, you will hear this question of dental education discussed, and you will realize the value of a diploma from an institution whose examinations are so carefully guarded as this one, whose teachers have voluntarily placed themselves and their teachings under the criticism of a board representing the dentists of this State, who have the power effectively to criticise your qualifications, yet who receive no compensation except in the elevation of their vocation, which is the highest ambition of any man worthy of being a member of a profession.

Other institutions have visiting boards, but this is the only one, so far as I know, that has a board whose vote is necessary for graduation, and this, as has been said by others, marks a distinct advance in professional education. If this board consisted entirely of men as inexperienced in examinations as I am, it might not mean so much, but as one-half of its members are the Censors and Examining Board of the Dental Society of the State of New York, a body whose members are rarely changed, and who have made a record in examinations for the State degree that makes their verdict universally respected, it should give to your diploma a value well worth striving for.

I was pleased last year with the plan for the examinations, which had previously been submitted to us for our approval. No one can so well bring out the knowledge of a class as the men who have taught it. But at the same time, with the very best intentions, they might be biased by personal considerations, when conducting examinations privately and without censorship; but when a board sits here whose only object is the elevation of dentistry, its members are able calmly and fairly to judge of your qualifications, and as they study your faces and bearing, to make all just allowances for your nervousness and trepidation. I will venture to say that no student who does his work faithfully here, devoting the hours not occupied in practical work to study, will ever fail to "pass." Any others who come here at the expense of friends or parents, and waste their time, are unworthy of a favorable verdict, and would only cast reproach on the diploma of an institution that lets them slide through. There is occasionally a genius, but most of us have to get there by hard work, and in the long run it is industry and faithfulness that pay.

I said a little while ago that your teachers also were under criticism. It is always possible for a teacher to teach those things that might not meet the approval of the profession at large, but here, as he stands before this board, questioning you on his teaching, he is being carefully watched, and such things would be sure to appear, and if not approved would be promptly censured. If there was room for difference of opinion, the matter would be discussed, and I hope there would be no imitating of the courtesy of the Senate, but that the majority would rule.

So, gentlemen, you not only have as good a Faculty as I know of anywhere, but you have them under the criticism of a large, disinterested board, who are your friends, and who desire that you should have the best preparation that dentistry can give you. I have known most of the members of your Faculty for years, and when asked to become a member of the Board of Curators, I said I should be proud to have my name connected with any institution in which Professor Barrett was at the front. Professors Southwick, Snow, Line, Allen and all the rest—where could better men be found? Professor Howard, a rapid, alert and thoroughly successful operator, is a man to whom I am indebted for ideas that are of daily assistance to me. Professor Darby could interest an Egyptian mummy, and revivify it. And so on through your whole Faculty; it is second to none, and thoroughly interested in turning out as good dentists as any institution in America, and that means the world.

Now, gentlemen, I want to impress one thing upon you; don't despise plate work. Learn it, and learn it thoroughly. Maybe some day you will get too high-toned to do it, but just at first you will probably have to make your living out of it. Your Professor Darby once said that a country dentist had to make his sets of teeth to fit the whole school district, and there was a heap of wisdom in that remark. The facts are, a great many people by whom you are surrounded, look upon the building of an artificial denture as a little finer work than filling a tooth. It is tangible, it is something they can judge of, and by your success or failure in this direction will they first try you and bring in their verdict.

When some old lady comes in and asks, "be you the dentist?" you just impress it upon her mind "you be," and get the impression of her mouth (in plaster of course) then and there. Then do your level best for her, and she will sound your praises over the hills, and you may be surprised to find what nice daughters or nieces she has, who need a front tooth filled, and whom you can educate into first rate patients.

Don't put a patient off until to-morrow when you can just as well do the work to-day. You might want to go fishing to-morrow, and your appointment, if they thought it worth while to show up, would interfere. Putting off work for the sake of appearing busy don't pay. People like promptness, and soon detect pretense.

Don't be seen on the street during the business hours of the day; it shows lack of business. Have regular office hours, and be there. Business men about you soon note these things, and knowing that one who is always in his proper place at proper times is apt to be an earnest, industrious man, they immediately assume that he is also competent, and are quite likely to show their appreciation by sending you some patients.

Don't have a novel to read in the office on dull days; save these for the evenings. Put in your dull moments in continuation of your studies.

It would be well if every young dentist would, from the start, while not neglecting any field of investigation, take some special branch for his own, and follow it. If he would do this, at the end of a few years he would be an authority, listened to with respect. A great many of us wish we had done so. Youth is the time for work. Don't think you can not have a good time when you are old. It is a fallacy that has done untold harm. I sometimes think the older one gets the better he enjoys life.

Subscribe for plenty of dental journals, and I won't say read, but will say, study them.

When you are out of college and located in practice, join your dental society, attend its meetings, and accept the first invitation you get to write a paper.

A friend of mine has a note book properly indexed. When at a meeting he jots down, under the proper letter, any ideas he may pick up, either on the floor of the meeting or in private conversation. Being an eager questioner and a modest man, he is getting together, in an accessible form, a valuable note book. As he jots down from whom the notes are obtained, he is able, if he desires, to write for further information.

If you go to a meeting and hear nothing new, don't complain and say it don't pay. It keeps some of the good old things in the mind to talk them over occasionally. As we are the authority in our own office, patronized by those who believe in us, and who are apt to be full as flattering in their remarks about our skill as they believe, it is conducive to the "big head," and to keep our hats within due bounds it is well for us to get out and find that there are others practicing dentistry who have heard of some of the wonderful things, as well as we.

I have talked with men who lacked in skill and early education, but who had had many years' experience, and have caught from them many an idea that proved invaluable.

Youth is not apt to reverence experience, and so gets many an unnecessary blow.

It has been said that a wise man learns from the experience of others, an ordinary man from his own, a fool from none.

When you have joined a society, live up to its code of ethics. If you have the natural instincts of a gentleman, it will be hard to do otherwise, and none but a true gentleman has any business in dentistry—except the other sex, of course, who, if they must be wage earners I am glad to see coming into our vocation.

Secret or exclusive methods or remedies have no place in a profession, and you should not call yourselves professional men while following unprofessional methods. If you keep to yourself a method that would cure a tooth or ease human suffering, you are responsible for every tooth lost and all suffering endured through your neglect to make it known.

Do you know how you are enabled to gain the knowledge to practice your chosen vocation profitably, and with comparative ease? Do you know why you are to be a great deal more than tooth carpenters or blacksmiths?

It is because other men, long since dead, opened the founts of their knowledge, unlocked the doors of their laboratories and operating rooms, and unselfishly bade others enter and learn; because equally unselfish men have handed the knowledge on down to you, with additions of their own; because such men, through our colleges, societies and journals, are continually giving.

The inheritance you got from the fathers, the knowledge you are receiving from your teachers and co-workers, you owe to your generation, you owe to posterity. Such knowledge is not to be wrapped in a napkin and carefully hidden; it must be kept in circulation, that it may be increased a thousand fold.

If you have no knowledge of book-keeping, acquire it. Then keep your books posted up every day, if you have to sit up nights for it. Balance your cash account every night; then you are unlikely to fail to credit payments on account. It excites distrust to ask payment of a bill already settled. Keep an expense account; it enables you to ascertain whether you are making money or not, and tends to economy.

Young practitioners count up how many fillings can be made out of an ounce of gold or amalgam, and jump to the conclusion that they are soon to get rich. But the cost of gold or amalgam cuts but a small figure in the year's account. Office rent, instruments, fuel, decorations of office, etc., all count, and are necessary expenses. If you find you are not earning enough to pay expenses, careful scrutiny of the expense account will show where you can economize next year, or, if that is impossible, will enable you to adjust your prices on a money-making basis.

I believe in a carefully and clearly kept record of work done—a book that can be shown, if necessary, to the patient. It often prevents misunderstanding. But I do not believe in calling the attention of patients to such a book, except for the purpose indicated. The book is for your own use and information, and if properly kept and studied will do much to enable you to see where and why work has failed, helping you to avoid methods that lead to failure.

It would be well to take an inventory the first of each year; then you know whether you are succeeding financially or not. Have a book ruled in columns, and opposite the name of the month place the gross amount of business done for that month, with the total expense parallel; then continue each year to place the same months' accounts beside them.

Thus in a moment one could compare the same months for years, and know whether they are gaining or losing; and if it is found that some one month is always a dull one, that can be utilized for vacations.

I could keep on for a long while giving you advice what to do and what not to do when you enter practice, but to most of you that probably seems a long way ahead, although to those of us who are older two or three years seem but a little while.

I have purposely refrained from saying much about what you should do here. Your course should be directed by your Faculty, and their instructions should be implicitly followed. There is no padding in their teachings; every detail required has its reason, although it may not be clear to you at first. Everything done must be repeated time and again, until habit is formed. There is no short-cut to knowledge. You will sigh for their censorship when you have to face the problems of practice alone and unaided. Moreover, if your Board of Curators ever have ideas of the methods to be followed here, they will be said properly to your Faculty, and not to you.

It has been hard for me, and I fear I have failed, to think of anything to say that would interest you, for I am not here to instruct you in any method of practice. But I have been glad to take the opportunity of this visit to Buffalo to make your acquaintance, so that the friendship that I feel for you, as beginners in the profession that has been my life-work, and which I look upon as second to none in the conservation of the health of humanity, may be known to you, and, I hope, reciprocated.

I am also glad that we are not to be strangers when we meet in the examination room, and it will cause me as much grief as it will you, if my duty to our profession ever compels me to cast a vote against one of you. Let us all hope that will never be necessary, and I am sure it rests with you to prevent it.

CHEMISTRY AND CHEMICAL FORMULÆ.

BY FRED J. GIESER, UNDERGRADUATE.

Read before the Barrettonian Society of the Dental Department of the University of Buffalo.

When we see a man like Tyndall, who only began the study of chemistry in his twenty-ninth year, disdaining all mercenary ends in a professional spirit, when we become cognizant of the love he had for scientific investigation, and that he did not look upon this world as a market place in which his genius and intellectual force were to be expended in profitable trade, we must begin to think that, after all, there must be something in chemistry that is worth knowing.

This branch of study is one of the most important to a proper knowledge of the profession of which we all hope to become members, and, I am sorry to say, probably the one least understood by us. The reason for this I attribute to the lack of a thorough mastery of its fundamental principles. Without direct contact, at the very beginning, with substances illustrating these principles, it is impossible to get a clear idea of them. As well might one attempt to learn operative dentistry from lectures and clinics alone. We must have the actual personal experience to enable us to understand the theory, for this is imbibed with practice, and not the practice with theory. All the most beautiful hypotheses extant, whether scientific or otherwise, have been born to us as the result of some actual operation. Never more true than in this instance were the sayings "Practice makes perfect," and "Experience is the best teacher." After two years of study in chemistry, I feel that I am just beginning to comprehend a few of these underlying principles.

There is hardly an operation the dentist has to perform, that does not in some way enter the domain of chemistry. But the science only emerged from its embryonic state at the beginning of the present century, and its zenith seeming to recede from us as we progress, there is still left a wide field for the coming dentist to investigate for the benefit of his profession. I venture to say, that the direction of greatest progress in the dentistry of the future will be in the domain of chemistry. In this the past can speak for and give promise of the future.

What is chemistry? It is that branch of science which examines the elements and their compounds, their changes in composition and the laws governing such changes. Everyone beginning its study should comprehend that definition, and fully understand its meaning. It is well always to use the word "why," and to know the reason.

One very important point in the study of chemistry is first to comprehend and then to commit to memory the technical terms, and the general facts, and the laws deduced from these facts; in other words, the fundamental principle of this science. But memorizing is very difficult unless one comprehends the meaning. There must be understanding of what is learned, in order to retain the knowledge.

One of the greatest difficulties which the beginner encounters is the writing of formulæ, and their correct reading. Compounds are divided principally into binary and ternary. Ternary compounds are again subdivided into acids, bases and salts. Elements are divided into two classes, positive and negative. Unless we thoroughly understand this classification, we shall be unable to write or read a formula comprehensibly. We will constantly be groping in the dark. Binary molecules are composed of two, and ternary of three elements, as the names imply.

Now comes the question, "how shall we write these compounds?"

Take for instance tin and chlorine. How may we make a compound of these two elements? The first essential is to know their quantivalence, as well as that of other elements. Secondly, we must know which are positive and which are negative. Having mastered these two points, that which follows will seem comparatively easy.

Of the elements Sn and Cl, tin is positive, hence it must precede Cl, which is negative. The positive element is always written first, and in reading it is always first mentioned, and thus the proper name for combinations of these elements is tin chlorid, and not chlorid of tin. The quantivalence of tin is either 2 or 4. Write one of these at the upper right side of the symbol, thus: Sn^4. The valence of Cl is 1, which is not usually written, but in this case we will do it for the sake of the illustration and we have the formula $Sn^4\ Cl^1$. Then reverse this order, writing the numbers below, thus: $Sn\ Cl_4$. This gives us stannic chlorid. Had we used 2 instead of 4, as the quantivalence of tin, it would be thus, viz.: $Sn\ Cl_2$, which is stannous chlorid, ous indicating the lower, and ic the higher quantivalence of the positive element.

Of course there are variations, or rather exceptions to this rule, as to all others. As one of our professors says: "We must have the exceptions in order to prove the rule."

A point that I have not mentioned is the classification of the compound radicals, such as NO_3, which is the termination of all nitrates, or SO_4 the termination of all sulphates, as is PO_4, that of all phosphates. These are always considered as a single atom, and are characteristic of a certain series of compounds. Compound radicals, like atoms, may be positive or negative, and each one has a definite equivalence, like the atoms. If we know the valence and polarity of all elements and radicals, we will be able to write almost any formula occurring in chemistry, there being but few exceptions to the rule.

The next thing to be considered is, how to read them, and for that we have the following rule: Give the name of the positive element or radical first, then the name of the leading negative element or radical, with its termination changed to id in binaries, and to ite or ate in ternaries, ite denoting the lesser and ate the greater amount of oxygen contained in the negative radical. As examples, let us take the following, viz.:

$NaCl$ = Sodium chlor*id*
$NaNO_2$ = Sodium nitr*ite*
$NaNO_3$ = Sodium nitr*ate*
$CaSO_3$ = Calcium sulf*ite**
$CaSO_4$ = Calcium sulf*ate*
H_2S = Hydrogen sulf*id*

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* At the last meeting of the National Association of Chemists, it was decided that certain changes should be made in the spelling of chemical terms, and the new rule is adopted in this article.

I have already mentioned that when there is more than one quantivalence of the positive element the endings ous and ic are used, ic denotes a higher valence than ous. *E. g.*:

$SnCl_2$ = stannous chlorid
$SnCl_4$ = stannic chlorid
$CuCl_2$ = cupric chlorid
Cu_2Cl_2 = cuprous chlorid

When we desire to denote something higher than ic or ate we use the prefix per, and when something lower than ous or ite it is denoted by the prefix hypo. As for example:

$HClO$ = Hypo-chlorous acid
$HClO_2$ = Chlorous acid
$HClO_3$ = Chloric acid
$HClO_4$ = Per-chloric acid

or

$KClO$ = Potassium-Hypo-chlorite
$KClO_2$ = Potassium chlorite
$KClO_3$ = Potassium chlorate
$KClO_4$ = Potassium Per-chlorate

I might go on multiplying instances and introducing other principles, but I have perhaps cited enough to illustrate the truth which I wished to impress upon you, and that is the importance of mastering the basal principles. Without a full comprehension of these, chemical formulæ are a meaningless jumble of letters and characters; but when fully understood, not only does every symbol have a meaning that conveys a great deal of significance, but its relative position carries its own meaning. Men who have no chemical knowledge sometimes attempt to write formulæ, but they always betray themselves by some wrong combination, or by a mistake in the prefix or termination. They are as apt to place the negative element before the positive as they are to get it right, and that shows to a chemist that they are talking of what they do not comprehend. Chemistry is an exact science, and its combinations must be exactly expressed or they become nonsense. But when fully comprehended, there is no study that will so much assist us in becoming scientific professional men as chemistry.

DENTISTRY IN ONTARIO.

BY W. H. SNIDER, UNDERGRADUATE.

Read before the Barrettonian Society of the Dental Department of the University of Buffalo.

The numerous questions that have been asked me by students of the Dental Department of the University of Buffalo concerning Canadian dentistry, are sufficient evidence to me that a paper on this subject would not be uninteresting to the members of our Society. Before entering upon the discussion of this subject, I would like it understood that this is not a paper upon dentistry in Canada, but dentistry in Ontario. Canada comprises a great extent of territory, and is divided into many provinces, as they are called there, each one having a dental law of its own. Of these provinces Ontario is the chief, and it is concerning dentistry in this province that I intend to speak.

All the members of the dental profession in Ontario are incorporated by an act of Parliament as the "Royal College of Dental Surgeons of Ontario." In order to become a legal practitioner, a person must become a member of this body. The province of Ontario is divided into seven electoral districts, the dentists in each choosing a representative, and the seven men thus elected constitute the Board of Directors. This Board is empowered to make by-laws, engage a teaching faculty, appoint examiners, etc., and is charged with the duty of protecting the profession. If a person wishes to become a member of the college, or in other words a legal practitioner of dentistry, he must first of all matriculate. The college holds no special examination of its own, but accepts in lieu thereof the certificates of the Educational Department of the Province, and those of Canadian Universities, the minimum being what is known as the Third Class Teachers' Certificate. The time required to obtain such certificate, after passing into a High School, is from one to two years, according to the ability of the student. After matriculation, the student must sign indentures, or an agreement with a legal practitioner, covering a period of three and a half years, and he must beware that he does not fall into the hands of a sharper, or his eye-teeth will be cut over again. He will be told of all the instruments he is likely to break, all the plates he is apt to destroy, and the valuable time that must be sacrificed in teaching, until the cold perspiration trickles down the back of the neophyte. After being inspired to that extent, two or three hundred dollars will be demanded as a guarantee against all loss that may be sustained.

Before signing the indentures, the student should inquire about the "reasonable holidays" mentioned in a clause of the agreement, because the ideas of some preceptors concerning the reasonableness of holidays are very limited, especially if they are a little busy, which is usually the case when the student wishes to witness a foot-ball match, or join a camping party. But while there are preceptors who are hard on students, the great majority of Ontario dentists remember that they were once students themselves.

Another clause in the indentures compels students to obey all reasonable commands, and if there is one thing some preceptors have great ideas on it is concerning this. They will command students to sweep the office, light the fires, work in the garden, run errands, and all the time seek to comfort him by telling how much easier is his lot than that of other apprentices. Should he at any time desire to discontinue the study, he may do so with the preceptor's permission.

During the currency of a student's indentures, he is required to attend courses of lectures at the college of dentistry in Toronto, where instruction is given in the usual subjects of a dental curriculum. At the college, the student must pass examinations in each year in the subjects laid down for that year. The examiners are appointed by the Board from among its members. During the last term the student must file with the Board declarations by himself and his preceptor that all the requirements of the agreement have been complied with. If he then passes the final examination at the close of his third year satisfactorily, he receives the title of Licentiate of Dental Surgery, and is constituted a full-fledged member of the college. The college is not authorized by law to confer academic degrees, but it is in affiliation with the Toronto University, which has formulated a curriculum in dentistry, on compliance with which the degree of D. D. S. may be obtained.

The dental law of Ontario is very stringent, and it is thoroughly enforced. One section reads: "No person who is not a member of the Royal College of Dental Surgeons of Ontario, shall practice the profession of dentistry or perform any dental operation upon, or prescribe any dental treatment for, any patient, for hire, gain, or hope of reward, whether by way of fees, salary, rent, percentage of receipts, or in any other form whatever, or shall pretend to hold or take or use any name, title, addition or description, implying that he holds a certificate of license to practice dentistry, or that he is a member of the said Royal College of Dental Surgeons of Ontario, or shall falsely represent or use any title representing that he is a graduate of any dental college."

Many are the schemes of quacks to defeat the intentions of the law, and some of them are exceedingly ingenious. Traveling dentists or tooth-pullers have pretended to extract teeth free, using this as a drawing card to enable them to sell some patent or other nostrum. But in at least one such case, which arose not long since, the Court held that the operation was performed in the hope of a fee or reward, this being the sale of the article that was offered at the same time. The most of Ontario dentists, however, live up to the code of ethics. I do not believe there are as many advertising dentists in the whole of Ontario as there are in this city alone. Indeed, did popular opinion back it up, there would now be a law empowering the Board to strike the names of advertising dentists from the lists of legal practitioners. But a card in the newspaper, if not too glaring, is not considered unprofessional, and is used by very many practitioners.

EIGHTH DISTRICT DENTAL SOCIETY OF THE STATE OF NEW YORK.

A regular meeting of the Society was held in one of the dining-rooms of the Tifft House, in the City of Buffalo, on the evening of February 26, 1894. The members dined together previous to the meeting, and after the cloth was drawn about forty of the students in the advanced classes of the Dental Department of the University of Buffalo, upon invitation, entered the room and took seats on each side of the long table. The president of the society, Dr. H. J. Burkhart, of Batavia, called the meeting to order, and after the usual reports introduced the speaker of the evening, Dr. F. T. Van Woert, of Brooklyn, President of the State Dental Society, who delivered an address upon pyorrhœa alveolaris.*

After the address, the chairman of the executive committee, Dr. C. S. Butler, of Buffalo, read a number of communications from well-known members of the profession in other cities, giving their views upon the subject of the evening.†

DISCUSSION.

Dr. Van Woert: Regarding my assertion that necrosis is never present in cases of pyorrhœa, I hope the students who are present from the University of Buffalo will look up the matter, as they can do so better than at any school we have in New York. They have a fine dissecting room to which they can go for material, and there will be no difficulty in obtaining evidence that shall be conclusive. I have here a number of specimens obtained from post-mortem cases, and I will pass them around for your inspection. I think you will agree with me that they sustain my assertions.

Dr. F. W. Low moved a vote of thanks to all those gentlemen who have forwarded papers to be read at this meeting. The motion was carried unanimously.

F. W. Hinkel, M. D., Clinical Professor of Laryngology in the Medical Department of the University of Buffalo, who was one of the guests of the evening, was then introduced by the president. Dr. Hinkel said: Mr. President and Gentlemen, I am not indulging in platitudes when I say that I have listened to this discussion with a great deal of interest. My concern has been especially in observing the scientific ways and inductive methods by which you study your problems, and the manner in which dentistry is demonstrating itself an integral branch of medicine. It is in regard to this subject, and possibly to others in your special field, that you seem somewhat divided, as our learned laryngologists and others are, into two broad classes; those who view pathological manifestations from a local, and from a constitutional standpoint. I can, of course, have no professional opinion upon the merits of the question before you to-night. I know nothing about its pathology, or the best methods of its treatment.

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* See page 51 of this number.

† These communications are given in full in this number, commencing on page 54.

As I understand, I am desired to speak to you concerning those manifestations in the upper air passages of the throat, which are of lithæmic or gouty origin, with a view of corroborating, possibly, a definite theory regarding certain lesions about the teeth. There is no reason why these should not be of gouty origin, inasmuch as other like conditions are produced by the blood. I am certainly as free from bias in this matter as may be, and from the very elaborate and fair presentation of both sides of the question as given in the papers read, I must say that I am swayed backward and forward. Those who have insisted upon a constitutional origin of these disturbances, have, from one standpoint, made out an excellent case, while, on the other hand, some of their arguments seem to be completely refuted. There is certainly what is called a gouty pharyngitis, although I cannot say with Dr. Brubaker that it is easy to diagnose. I take the ground that there are diseases of the upper air passages distinctly lithæmic in their origin. But what might be considered a corollary of this proposition is not so easily demonstrable. I know of no throat lesion that necessarily accompanies gout; I never saw such a case.

I have seen many lesions of the upper air passages that I believed to be of lithæmic origin, using that as a generic term descriptive of the etiology of gout. In fact, I am inclined to believe there are certain clinical aspects that in many cases of nasal pharyngeal, or true American catarrh, are amenable to a course of hygiene similar to that which we would use for a gouty patient; that is, plenty of fresh air and exercise, a plentiful use of water, internal and external, and good general physical treatment. Such a course will often be more effective in nasal pharyngeal catarrh than any process of local medication. I believe that cold in the head, acute coryza, is an acute state in the effete matter in the system similar to that in a gouty or rheumatic condition.

Again, it is strongly asserted that hay fever is a distinctly lithæmic or gouty diathesis in certain individuals, and that a course of hygiene based upon that point of view will often abort the attack. There have been some papers presented within a few years in support of this, but I know of no careful investigation made before, or during, or after acute coryza, or during certain conditions of the throat in those afflicted with nasal pharyngeal catarrh, that would give sufficient data positively to assert that in any one of the cases presented that condition exists, though they are regarded by a large number of physicians as having that element in them. In none of them has any deposit of secretion that we could weigh been determined, like those accumulations about the apices of the teeth, which show urates to be present. No accumulation within the pharynx or ducts in conditions of that character have unmistakably shown that urates were present as a secretion, or in secretions, yet the whole clinical condition shows manifestations of a gouty condition of the throat. If that be the case, it is not unreasonable to suppose that peculiar conditions of the mouth might with justice be ascribed to the same disease. Yet there is not necessarily any analogy between the conditions of the throat and those existing about the teeth that have been before you for discussion.

I would like most heartily to endorse the remarks of Dr. Van Woert in regard to the necessity of aseptic treatment of your instruments and hands. We find in surgery that it is a criminal act of negligence not to use it after every case, and the dentist who is careless with his instruments may easily communicate disease to a subsequent patient.

Dr. W. C. Barrett: The hypothesis presented by Dr. Peirce is, that the disease which is commonly denominated pyorrhœa alveolaris has a constitutional origin; that it is a cachectic condition, a gouty or uric acid diathesis. At our last State Society meeting I read a paper upon this subject, in which I stated my belief that there were three distinct characteristic conditions usually denominated pyorrhœa.

The first of these has its origin at the gingivæ, is superficial and due to some local irritation; I denominated this gingival pyorrhœa. The second was marked by distinct nodules of calculus upon the roots of the teeth, giving rise to deep pockets, and this I called nodular pyorrhœa. The third I recognized as of constitutional origin, and as marking a cachectic condition, and I believed it to have its inception in some disturbed state of the pericemental membrane. I said that I recognized a distinct element of heredity in it, and that it was communicable by infection. In neither of the other conditions was there any contagion; I called this cachectic pyorrhœa, but just what was the peculiar diathesis has not yet been positively determined.

I am of the same opinion to-day. There is little doubt that a gouty condition is a factor, but that every case of cachectic pyorrhœa is of lithæmic origin I am not now ready to admit, because that would imply that the disease could not exist without rheumatic or gouty symptoms, and that is far from an established fact.

But that in this latter condition there may be a deposit near the apex of the roots of the teeth which must have come from the blood, I am thoroughly convinced, for I have lately seen instances of it which I cannot gainsay. Whether these arose from a disturbed condition of the pericementum primarily, or whether that disturbance was but the result of a constitutional habit, I am not prepared to say.

I have had some correspondence with Dr. Kirk, of the *Cosmos*, and he asked me this question: "Can you point to a single instance in which you believe you have indisputably established the fact that there were calcic deposits upon the roots of the teeth without any break in the continuity of the cervical portion—that is, in which there were deposits on the root without there being a pocket leading to them?" I answered him that while I believed that to be the case, yet I could not positively say that I had seen or known it absolutely demonstrated. Within a week afterward I wrote him that I wished to withdraw what I had said, and believed that I now had the indisputable testimony. It arose from a case which first fell under the observation of my associate, Dr. Squier, in which one of the Sisters in a charitable institution had a distinct inflammation opposite the root of an incisor. He examined and treated it, but could not to his own satisfaction positively determine just what was the pathological condition, and he finally called me in. I found a distinct kind of induration, sub-mucoid, that distended the outer plate of the alveolus. We tested the tooth as to its vitality, and decided that the pulp was alive, and not specially irritable, or in an inflamed condition. I advised waiting a time to see what developed, and within a week or ten days there was an abscess opened nearly opposite the root of the tooth, but not exactly over the apex. We waited a day or two longer until the pus was discharged, when distending the sinus we found there was a distinct opening through the alveolar plate, and that characteristic calcic deposit in nodules was unmistakable. We examined very carefully, as we had done before, and there was absolutely no break at the gingival margin. We examined as carefully underneath the gum, and laying that back exhaustively probed the edge of the alveolus all about the tooth. There was not the slightest break anywhere, and yet there was the characteristic deposit on the root. Since then I have had another analagous case. It was an absolute fact, as nearly as I could determine, that there was no break in the continuity of the gum, or along the alveolus, which was closely adherent to the tooth itself at the margin, and yet there certainly were deposits upon the root. What does that prove? That there must have been a deposit from the blood, because it can have no other origin. But was that necessarily connected with a gouty diathesis? The sister herself had never had any gouty or rheumatic symptoms whatever, and there was no history of gouty diathesis in the family, that we could determine.

I have had other peculiar cases. One comes to my mind now, that of a lady who has beautiful teeth, and who has been under my charge for nearly twenty years. Periodically she comes to me with indications of what some call a gum boil. In a short time a rather superficial abscess breaks, and I find a pocket more or less deep beside the tooth, and at the bottom of this the characteristic nodules. These are removed with difficulty, and usually I slightly bur off the edges of the alveolus, treating it antiseptically, and with injections of some stimulating astringent, when I get complete healing and a partial restoration of the wasted bone, but after a time she returns with an affection of another tooth. And yet she is fastidious in the care of her teeth, nor is there the slightest trace of any rheumatic or lithæmic trouble in her history. But her mother and father both lost their teeth from pyorrhœa, as nearly as I can determine. The father was my patient for a short time before he died, and the mother for a number of years.* If it be a fact that pyorrhœa is due to uric acid alone, how can we account for this case? I can reach no other conclusion than that while this hypothesis presents many attractive features, yet there are cases that cannot be traced to it, and these are sufficient to disestablish that as the sole etiological factor.

It may be claimed that I have been mistaken in my diagnosis—and yet I cannot see how this is possible—or that the gouty symptoms had not yet developed. But twenty years of observation in the same family should give sufficient time for their unmasking if they are ever to be exhibited. I repeat, then, that if pyorrhœa be but one of the symptoms of a gouty diathesis, it cannot exist without the lithæmic condition, and I believe this to be disproved by clinical facts. That it often accompanies that cachexia I do not doubt, but a careful study of many years, a number of them with special reference to any possible connection—for this theory was first urged a long time ago—brings me to the conclusion that pyorrhœa is not necessarily dependent upon the uric acid condition, and this conviction is strengthened by the fact that there are many unmistakable cases of this disease in which there are no traces of deposits of calcic matter whatever.

Dr. Frank French: It was very gratifying to me to hear Dr. Van Woert express his opinions in the way that he has, and carry out his convictions in his every-day practice. Regarding the gouty diathesis, I don't know; I think there is a good deal in it, and there may be a good deal that is not in it. For a short time, and only a short time, I have taken pains in such cases as were practicable—with patients of the male persuasion—to test the urine, and have in every case of pyorrhœa found a strong acid reaction.

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*I have since learned that the mother was troubled with muscular rheumatism, and that previous to her death there was swelling of an obscure character about some of the articulations. A sister has also suffered from muscular rheumatism, but with no signs of concretions at the joints.—[W. C. B.

Dr. C. S. Butler: I hesitate to say a single word on this subject, as I have already occupied your time so much. After reading Dr. Peirce's conclusion, if he were here I should be tempted to ask him what caused the blood to exude these calcic salts at this particular point. It is admitted on all hands that the salt may be deposited at the extremities of the teeth, but it is inconceivable to my mind that the blood plasma would deposit it without inflammation of some kind. Dr. Peirce weakens his argument by saying that simply spreading the teeth may induce the deposition of this calcic salt. If that is a fact, then the deposition is a secondary and not a primary condition of the disease which he is endeavoring to treat, and in that I believe Prof. Truman is right when he urges that the deposit is secondary, and not a primary condition, as suggested by Prof. Peirce.

Dr. M. B. Straight: I do not pretend to know much about the etiology of pyorrhœa, but in my practice I have paid a great deal of attention to this difficulty for the last ten years. I have never yet come across inflammation about the teeth without being able to trace it directly to a cause, either the deposition of salivary calculus, or to bad occlusion or non-occlusion of teeth. I never came across a case of pyorrhœa alveolaris without noticing a faulty occlusion. I have treated many cases with more or less of success, and I have always been able to alleviate, and in many instances to overcome the discomfort, and preserve the teeth for many years, even in the most unfavorable cases.

I take a great deal of stock in the theory of micro-organisms. I was much interested in Dr. Barrett's remarks, and his is the only instance in which I ever knew that deposits were detected without an opening at the gum margin. I have seen cases in which there was no apparent connection with the gingivæ, but further search would reveal one, sometimes exceedingly minute. But upon that point I am not positively clear. I have great confidence in Dr. Barrett's diagnostic ability, and I should be exceedingly obliged if he would let me see the next case that comes under his observation, for we are very near neighbors.

Dr. Barrett: In the case which I cited, there was absolutely no gingival disturbance, no discharge of pus from the gingivæ, and never had been. The gum margins were in a perfectly healthy and normal condition, and the only lesion was what might be denominated an alveolar abscess. I was originally as faithless regarding that peculiar condition as Dr. Straight, but my final conclusions were irresistibly forced upon me. Regarding another point: I believe Prof. Peirce concedes that pyorrhœa is communicable. If that be the case, if it can exist by infection from another mouth without there being any uric acid diathesis, what becomes of the theory that it is the sole cause? Certainly the dentist who does not employ every possible antiseptic precaution is guilty of criminal negligence.

Dr. A. P. Southwick: I would like to ask Dr. Barrett, and the gentlemen present, if the deposit upon the lower portion of the teeth will not produce sooner or later the death of the pulp in every instance?

There is one case that comes to my mind now, a lower incisor that was extremely sensitive. The gingival margins were as closely attached as those of any other tooth in the mouth. The swelling kept on and finally resulted in an abscess. The patient went to two physicians who operated upon him for necrosis, and they told me afterwards that they were never so surprised as when they cut to the bone and found it healthy. The patient returned to me, and after treating it for some time I finally concluded to take out the tooth, and about one-third of it from the end to the gingival margin was covered with this deposit.

Dr. F. E. Howard: I have been extremely interested in the papers presented, and in the remarks upon the subject. With the conclusions which have been drawn from Dr. Peirce's paper I cannot agree, but I am very much inclined to favor Dr. Truman's theories. I never have seen a case in which there was any deposit at the apex of the root unless it began at the gingival surface first. I have seen marked cases of pyorrhœa in a person not over eighteen or nineteen years old. I have no doubt that a gouty diathesis may aggravate these conditions, but I believe the true cause of the trouble is local, though I have no doubt systemic treatment might aid very much in many cases.

Dr. H. H. Boswell: In considering the question of pyorrhœa alveolaris I find it difficult to apply the theory of Dr. Peirce, and I am at a loss to know just what he thinks. I have had cases indicating that he is both right and wrong. In my own practice, I conclude from the fact that when it is healed in one place it will break out in another, that it is a constitutional derangement rather than a local irritation.

Dr. F. W. Low: The most recent convert to a new theory is the most enthusiastic advocate. When I came here I was ready to be crucified for the uric acid diathesis. I want to wait a month now. The great objection to Dr. Peirce's theory is the one mentioned by Dr. Barrett, that pyorrhœa can be communicated by inoculation. If that is proven, Dr. Peirce is in the soup. The objection that has been raised, that if pyorrhœa is due to gouty diathesis we ought in every case of the latter to have the former, I do not think is good. If a person has stone in the bladder he doesn't look for pyorrhœa. The original crystal which forms that stone is uric acid, and that proves the uric acid diathesis. I believe one can have a single tooth affected that may act as a blow-off for all he has in his system.

I have been studying the symptoms of the uric acid diathesis, and comparing those of stone in the bladder with pyorrhœa, and find them as follows:

URIC-ACID OR GOUTY DIATHESIS.

DETERMINATION.	
To the Teeth.	To the Bladder.
RESULTS.	
I. Blood plasma, abnormally acid, in connective tissue about the teeth.	I. Urine abnormally acid.
II. Formation on peridental membrane of the scale of serumal calculus—essentially crystaline uric acid.	II. Formation of crystalline uric acid nucleus.
III. The presence of calculus results in inflammation of mucous and cellular tissue of gums, and considerable quantities of phosphate and carbonate excreted from the saliva (which is frequently found to be excessively alkaline) now begin to deposit about the gingivæ, causing sufficient irritation to result in recession of these tissues, until the soft chalky deposit covers the uric acid nucleus as it does the nucleus in the bladder.	III. The presence of acid urine and the sharp and ragged edges of the nucleus result in an inflamed condition of the mucous lining and cellular tissue of the walls of the bladder, and this causes considerable quantities of the phosphates, combined with alkaline urates, to be thrown out by the kidneys, and when they are received into the bladder the urine again changes to an alkaline condition, and the phosphates and carbonates deposit on the nucleus a soft, chalky scale, and it now becomes smoother.
IV. The inflammation changes from acute to sub-acute, and the cellular tissue hypertrophies and grows up about the nucleus, once more approximately restoring the continuity of the gum margin, though the tissue is no longer attached to the root of the tooth, and thus deep pockets are formed, the gingival margin assuming that peculiar purple or proud-flesh appearance present to a greater or less extent in all advanced cases of pyorrhœa.	IV. The inflammation changes from acute to sub-acute, and the cellular tissue often begins to grow about the nucleus where it has made an indentation by its presence, and shortly it becomes invaginated, wholly or in part, into the walls of the bladder. So much may this be the case that it is often difficult for the surgeon to dislodge it.
V. Breaking down of the tissues follow, and pus is often exuded.	V. A chronic inflammation shortly follows, and very often pus is voided with the urine.

Dr. Van Woert: In concluding the debate, I wish to make a confession, to establish the truth of the theory that we can inoculate pyorrhœa alveolaris. I made a plate for a lady six or seven years ago, and she presented herself to me in eighteen months for a new one. She had, at the time I made the first one, two superior canines. They made a disagreeable, ugly looking mouth, and I wished to extract them, but she insisted on leaving them in her mouth. When she presented herself the last time, I thought to myself that here was a good chance for an experiment. The gums were healthy, the teeth were healthy, but they should be removed, and as I had two or three marked cases of pyorrhœa on hand at the time, I thought I would try and see if I could get rid of them by indirect means. I told her there were a few deposits that I would have to remove, and I went to work with pyorrhœal infected instruments, that were covered with septic matter. I can show you by my books that she soon had a full denture, and the canine teeth were taken out with my thumb and finger. When I first related this I was taken to task for it. I will admit it was a direct case of mal-practice, but it was justifiable. The cause of science demanded it. I wish I had two or three more such cases, and I would do it again.

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CORRESPONDENCE.

LETTER FROM MR. MUMMERY.

Editor Dental Practitioner :

Without again opening up the question of the position of Great Britain to the World's Columbian Dental Congress, will you permit me to say a few words with regard to the editorial article in the July number of your journal.

We regret very sincerely the misunderstandings that have arisen on this subject, and trust they have only had a temporary effect in disturbing the friendly relations that have hitherto existed between the members of the profession in the two countries. With regard, however, to one gentleman mentioned in your article, all of us who know Mr. Smith Turner are well aware that he is the very last man who can be justly accused of self-seeking, or of doing anything merely to advance his own interests. We know how he has worked hard for us for many years, sacrificing time, health and energy for the good of the profession, and we who enjoy the fruits of his labors should be more than ungrateful if we did not acknowledge and admire the good qualities that have brought about these results.

I am quite sure, Mr. Editor, that it is only from want of opportunity of knowing Mr. Turner personally, that you have inadvertently made a reflection on his character that his worst enemy, if he had one, could not endorse.

Yours faithfully,

J. HOWARD MUMMERY.

10 Cavendish Place, London W., England.

THE DENTAL PRACTITIONER
AND ADVERTISER.

DR. W. C. BARRETT, ... EDITOR.

BUFFALO, N. Y., APRIL, 1894.

PYORRHŒA ALVEOLARIS.

Twenty years ago this affection was scarcely known or recognized as a distinct pathological condition. To-day it is absorbing more attention in dentistry than any other disease. Almost every man who pretends to any pathological knowledge is investigating it, and endeavoring to throw some light upon its etiology. Twenty years ago dentists were engaged in treating symptoms as they manifested themselves, without unduly troubling their minds concerning the exact tissue changes involved, or the source of the manifestations which they were combating. The first great stimulus to scientific investigation of the causes of oral diseases came when a few members of the American Dental Association agitated the formation of a new section in that society, devoted to the study of etiology. Less than half a dozen voluntarily enrolled themselves as members, when, in 1881, the section was established. It is a matter of personal pride that the editor of this journal was the first chairman of the newly established section.

We do not mean to assert that the subject of etiology had been wholly neglected, for before the change in the Association from the old plan of standing committees to the organization of sections, in 1878, that subject was comprised in the assignments to committees. But it had attracted little attention. The majority report of the special committee appointed in 1877, had proposed twelve sections, the fifth to be devoted exclusively to the consideration of etiology. But the report of the minority was finally adopted, and this provided for but six sections, the fifth covering anatomy, physiology, histology, microscopy and etiology. It may readily be seen that among so many other important branches, etiology came in for but a limited amount of attention. So in 1881 this section was divided, and Section Seven was formed, to be given up to physiology and etiology.

In 1882 the section recommended that the sum of two hundred dollars be given to the author of the best paper upon the etiology of dental caries, and in 1883 this was awarded to Dr. W. D. Miller, of Berlin; but so little was the importance of the matter comprehended, that by a snap movement, just at the close of the meeting, the matter was reconsidered and voted down, only to be re-enacted and carried into effect at a subsequent meeting.

Prof. Miller solved the question of the origin of dental caries, and the section then turned its attention to other questions, and has at different times asked the Association for grants of money to aid in the prosecution of etiological studies, and always to the permanent benefit of the society and the dental profession. That policy, in our opinion, should be continued, and a sufficient sum to defray the expenses of a series of observations upon the origin of pyorrhœa, by some competent man, should be set aside and offered for competition. Even though it should not result in forever settling this vexed question, it will direct the attention of investigators to the subject, and will stimulate thought and discussion which will at least eventuate in a better comprehension of the condition.

Pyorrhœa is now the least understood of all the complications which it is our province to treat, while it is the most destructive. It will be a standing reproach to us until its origin is finally and forever settled. It will be seen that we do not accept as entirely conclusive the opinions advanced by Prof. Peirce. The uric acid hypothesis does not, to our mind, meet all the phases presented, and yet there is little doubt that it may be a factor. It will be remembered that at all times there have been those who insisted that caries was produced by an acid, but no one, until very lately, could pronounce upon the character or source of that acid, or the conditions under which it was generated. Perhaps someone in the near future will reveal to us in what manner uric acid may induce the pyorrhœal condition, and the knowledge may come in such a form as to be a complete revolution of present theories, the gouty hypothesis forming the base of it.

In any case, great credit is due to Prof. Peirce for presenting the subject in such a graphic form as to arrest the attention of the whole dental world. He may be in error, but it is through just such mistakes—provided this be one—that truth is eventually reached. There may be weak points in his chain of argument, but their demonstration will but point the way to their strengthening, and lead up to a perfect comprehension of the whole subject.

Prof. Peirce will not claim to be the first to advance the rheumatic diathesis as the cause of a pyorrhœal condition. Indeed, it would be difficult to say to whom this distinction should be given. But no one has so completely formulated the hypothesis, and no one has presented such satisfactory analyses of the pyorrhœal deposits. There are not yet enough of them upon which to base a complete argument, but he will no doubt add to them. It will require hundreds of careful analyses before the question can be considered at all settled. But he has made a beginning, and doubtless others will follow in his footsteps.

In view of the importance of the subject, as well as the value of the communications presented, no excuse is needed for the taking up of so much of the space of this number by the papers read and the discussion indulged in at the late meeting of the Eighth District Dental Society of the State of New York, held in Buffalo. We do not remember an occasion upon which so much valuable material upon a single subject was presented in one evening. Indeed, any State meeting, lasting for days, might well plume itself upon such a showing in any one field, and a great deal of credit is due to the chairman of the business committee, Dr. C. S. Butler, for his indefatigable efforts, which were crowned with so great success. Every communication was sent at his personal solicitation, and all were addressed to him. We need not urge every reader of this journal carefully to study them. The weak points in every argument are pointed out, and each probable error is accompanied by its antidote. The matter is viewed by the various able writers, among whom are found some of the best in the profession, from almost every standpoint, and no one can attentively read them without being materially aided in reaching a satisfactory conclusion.

"AGAIN THE CAT."

On another page is printed a letter from the respected President of the British Odontological Society, which was received too late for publication in the last number of this journal. In the editorial which gave occasion for this communication, we did not charge Mr. J. Smith Turner with acting entirely from selfish motives, or with working solely to advance his own interests. The paragraph which Mr. Mummery, without doubt, had in his mind was the following:

> * * * It seems a pity that men of the mental calibre of J. Smith Turner, whom Americans know as a dental politician only, should have the power to interrupt the friendly feeling that has always existed here toward our English professional confreres.
>
> We honor men like Sir John and Charles Tomes, Howard Mummery, and others who have risen to eminence because of original work done by them for the benefit of their profession and fellow men; but for him who has devoted his life to cabals and political management, mainly to advance his own interests, most men have nothing but contempt, whether he hails from England or America.

We have had a number of years' personal acquaintance with Mr. Turner — not very intimate, to be sure — and have been a witness to some of his personal peculiarities. We were aware of his herculean labors and great sacrifices in the cause of dental legislation in England, and in the organization of the British Dental Association, for he has himself told us of them. In the paragraphs quoted, we said that Mr. Turner was known to Americans as a dental politician only, and to this day we have not learned of any other way in which he has distinguished himself. In the same connection we spoke contemptuously of men who had devoted their lives to cabals and political management, mainly to advance their own interests, and we are free to admit that the immediate proximity of the two paragraphs gives fair occasion for the supposition that both were leveled at the same man. This we now disclaim, and regret that the words "mainly to advance his own interests" were inserted. The rest of the matter we think was justified.

No one regrets more than does the editor of this journal the misunderstandings that have arisen between the dentists of Great Britain and those of America. No one in this country has in the past, according to his ability and opportunities, either felt or exhibited a more friendly and fraternal regard toward our English-speaking brethren. We know that the same sentiment has been universal in this country, and therefore the outrage to our feelings over the action at Birmingham was the greater, because we so well know that it was unprovoked and gratuitous. English ways are not our ways, nor are our ways theirs, but we have always been drawn toward our transatlantic cousins by many close bonds. To receive such treatment at the hands of strangers would be little, but coming as it did from our own brethren, it was a great deal. We were, and yet are, very indignant toward those whom we thought chiefly responsible for the wanton insult.

It is urged in extenuation that it was believed that the American Congress was inimical to the International Medical Congress, because, as a prominent English dentist said: "One of the prime movers in the Dental Congress had openly, in his journal and elsewhere, decried the connection of the dental profession with the Medical Congress, and strongly advocated independent dental congresses." Admitting this, the dentist referred to was but one, while Americans generally had supported the Medical Congresses quite as loyally as our English brethren, and had attended them in greater numbers. We are assured that these utterances had great weight in bringing about the action taken at Birmingham. Are we to understand, then, that the mere words of one man in America had greater weight with our English brethren than the deliberate, united action of the whole dental profession? Is this the way in which our English brethren would themselves be judged? Under such ruling we might justly charge the whole profession of Great Britain with the offensive words used by Mr. Smith Turner, and the more so as they were sanctioned by the vote of the British Dental Association.

We are assured by men of the highest professional standing in England, that the injudicious blowing of trumpets and the hip-hip-hurrahing over the Congress in advance, did much to prejudice it in the minds of Englishmen. Undoubtedly this was so, and we protested against it in no uncertain tones. But this, too, was the work of only a very few men whose zeal greatly outran their discretion, and it was no justification for the discourteous way in which the invitation to attend the Congress was received. The amount of it is, there is no possible excuse for the Birmingham action, save that it was brought about by an unfriendly and unfair appeal to British prejudices, by those who succeeded in mystifying the minds of the members and misrepresenting the true state of affairs. We do not mean to intimate that this falsification was willful, but whether done in ignorance or from malice it was alike effectual.

Our brethren of England have had unpleasant experiences with certain Americans who are outside all recognized lines at home, and who have swooped down upon London and other cities and made themselves obnoxious by their vulgarity and unprofessional ways. For this the dentists of America are not to be blamed, any more than are respectable Englishmen responsible for the ridiculous English cads who have made America their refuge. Let it not be forgotten that if some professional renegades have sought English shores, we have representatives whom even the British Dental Association has been glad to honor, while upon the continent men like Miller, Jenkins and Evans, would reflect credit upon any nationality.

We are assured that in the last number of this journal we did injustice to English educational institutions in asserting that they did not teach mechanics. This was formerly the case, but it is not now, and we gladly make the correction. But were we mistaken in asserting that the school instruction extends over but two years? That assertion has not been denied, and surely Americans could not accept two years in college, exclusive of any private pupilage, as a sufficient qualification for practice.

We certainly have no desire to keep an old sore open. But it seemed to us necessary to its proper healing that it be probed to its very extremity. That has now been done. We accept the disclaimer of any discourteous intention on the part of British dentists, who were carried off their feet by an unfair statement made by an unfriendly man. We are obliged to Mr. Mummery for setting us right where we were wrong, and if he or some other man, whose word is an authority in America, will write an article for publication here that shall serve to explain any seeming difference of opinion and to smooth any apparent asperities, it will have an excellent effect. Let him not spare those in America who may have aroused bad feeling by their actions, and we can assure him that it will be kindly received, and will tend toward more friendly relations.

In the meantime, we cheerfully accept Mr. Mummery's assurance that we have done Mr. Smith Turner an injustice in apparently charging him with working solely for his own personal advancement, and disclaim having intended such an accusation ; or, if it may justly be inferred from an injudicious expression, we offer our apologies and regret the language used. All the same, truth compels us to aver that Mr. J. Smith Turner is at this present time a *persona non grata* in America.

THE COLLEGE COURSE OF STUDY.

The International Dental Journal, in its March number, contains an editorial urging the extension of the annual term in our dental colleges from five to seven months. That this would be a long step in advance must be conceded by all. But the same fear of consequences deters some of the colleges that made them hesitate in changing the course from two to three years. It was then anticipated that the number of students would fall off, and that the schools languishing for lack of patronage would be compelled to close their doors altogether. It was urged that it was with the utmost difficulty that students could be induced to spend two years in pursuing the course, and if it were extended to three years there would be almost none at all left.

This reasoning was very fallacious, as the event has proved. Where a great falling off was anticipated, there was, on the contrary, a large increase; and although the number of schools has been materially augmented, every one of the old colleges is in a much more prosperous condition than ever before, while the whole number of students is more than doubled. The real truth of the matter is, when the curriculum was so narrow and the term so short, students believed that the objects gained were not sufficient to warrant their entering a college, but when greater advantages were offered, better training and more thorough instruction, they realized that a college education was a necessity. The broader system also tended to draw attention toward dentistry, and to attract to its ranks a better class of men.

But the curriculum is not yet what it should be. Three years may be a sufficient time, provided the whole of it is spent in the prosecution of the proper studies. When the winter term is but five months, it may become a mere incident in other labors. Farmers' sons, and those who are engaged in other avocations, can go to college during the winter, very much as in the country the boys and girls attend school during the same months—because there is little else to do. The five-months term, as Prof. Truman cogently remarks, really means about three and a half, for the first two weeks are spent in organizing the classes, two more are taken out for holidays, while the examinations and closing exercises occupy perhaps three more, so that the time actually spent in study may be made ridiculously inadequate.

When the term is short, and confined to the winter months, a poor class of students is encouraged to commence study. They are ambitious to do something besides hoe corn, and they earn sufficient during the rest of the year to keep them during a short term in college, and hence they commence a dental course without the proper and needful preparation. They have not sufficient of education to qualify them for a professional life. Their pecuniary circumstances are such that they cannot pursue their studies between terms, and hence what is gained during their four or five months' work in the winter is lost when their attention is turned to other matters in the summer.

We would not be understood as endeavoring to throw any obstacles in the way of young men who are struggling for self-advancement. Our sympathies, indeed, are too strong in their favor, for we have always belonged to this class. But it is true that when the path is made too easy, and facilities are furnished for graduation without the period of mental discipline and practical training that is absolutely essential to thorough equipment for professional life, many young men are encouraged to enter upon study who must be launched upon the world only half qualified for the responsible position which they attempt to fill. The consequence is that they themselves are comparative failures, they stand in the way of other deserving young men, they work irreparable injury to the community, and they bring discredit and odium upon a calling that should be better exemplified.

No young man has any right to enter upon the studies leading to a profession, unless he shall have sufficient of preliminary education, and be possessed of enough money, to enable him practically to devote his entire time to study until the end of his term. Nine months of the year should be spent in school, and there should be two semesters, with vacations between them which would cover the other three months. This time would be none too much, for every honest and competent educator knows that it is quite impossible properly to cover all the studies that should be included in the curriculum, even in three terms of seven months each. Something must be omitted or curtailed, or the classes must be worked beyond the capacity of the average student. As for a five-months term, it is too often but a travesty upon study. It is true that the short-term colleges do cover a great deal of ground, but it can only be done by cramming students beyond the point of wholesome, healthy, proper digestion and assimilation of the school pabulum, which must result either in a mental dyspepsia or a final total loss of substance.

It is probable that it would not be practicable at one step to lengthen the term to nine months, though we are fully convinced that this must come in time, but a term of seven months is easily attainable, and should certainly tend to raise the status and increase the prosperity of the colleges to as great, or a yet greater extent, than did the lengthening of the course to three years. It would give to the schools a much better class of students, too, of men who could afford to give their whole time to study, and who have a proper preliminary education and training. At present these men are attracted to fields that demand higher qualifications, and in which their abilities will be better appreciated.

It may be assumed that this can be accomplished by raising the standard of matriculation. But the schools must obtain their material from those who apply for entrance. They may choose the best among them, but if the general tone is low, that must be the quality of the average accepted student. In the State of New York, the lowest qualification for matriculation in the medical colleges is the certificate of the Regents of the State University. This, during the short time in which it has been effective, has materially raised the tone of the medical classes. But it has not done as much in this direction as the lengthening of the terms of study. When we reach the point of a minimum term of seven full months, we will be able to raise the entrance standard, for a better class of young men will be attracted to dentistry; those who are prepared to give their whole time to study, and who have the needful means to carry them through their course without denying themselves those facilities and accessories that are essential to proper research.

THE VIRTUES OF TIN.

In a previous number of this journal we had something to say of tin a a material for filling teeth. Since then we have had the privilege of listening to a paper read by Prof. E. T. Darby, of Philadelphia, before the Second District Dental Society, in Brooklyn, which presented the subject in a light that was new to us. We had urged that tin was not cohesive as is gold; that the use of the mallet in consolidating it was contra-indicated, and that the proper method to introduce it is in the form of cylinders. While we still believe that to be an excellent way, Prof. Darby has conclusively shown that tin is remarkably cohesive when properly prepared and used. Contour may be as easily restored with it as with gold, and whole teeth may be built up with it from the gum as readily as with gold foil.

The tin presented by Prof. Darby was not in the form of beaten foil It was prepared by first casting chemically pure tin into a disk. A convenient way to make these is to use as a model a common corundum wheel that is one or two inches in diameter and a half inch thick; to mould this in sand, and into the matrix to pour the molten tin.

This may be mounted upon a mandrel, placed in a lathe that has a good hand-rest, and thin, narrow shavings turned from it. These, when freshly prepared, will be found to possess astonishing properties. They have all that peculiar softness and adaptability which characterizes that metal, while, at the same time, they are more cohesive than the best cohesive gold, and lost contour may easily be restored by their use.

It is not meant to be asserted that such a contour filling possesses the strength of gold, any more than that it has the same color, and it probably is not practicable to use it for general contour work. But it has a density and hardness that few would give it credit for, and its wearing properties are remarkable. But it must be kept from contact with the air. A film is soon formed over its surface that utterly destroys its cohesive qualities. Undoubtedly this fact has had much to do with the abandonment of tin as a filling material by many. The ordinary tin foil, as it is obtained in the market, is utterly unfit for use, because it is not freshly prepared. Perhaps it is allowed to lie in the case of the operator until it has lost all its admirable qualities, and then when the attempt to use it is made there is little wonder that it is condemned. But good tin foil, when just from the hands of the beater, may be used anywhere, and will accomplish all of which gold is capable.

Tin possesses certain advantages that gold does not. It seems peculiarly congenial to tooth tissue, and with the exception of strength, hardness and color, it is superior to gold in every way. It probably has the widest sphere of usefulness of any material now in use, and is adapted to more diverse conditions. If dentists were to be restricted to the use of but a single material for filling teeth, probably tin should be the one selected, for with it more teeth can be saved than with any other material. But it is more difficult of insertion than any of the plastics, and as its color is so near that of amalgam, the latter will be used in its place by all who are lacking in either faithfulness, skill or honesty.

THE MAXILLARY SINUS.

More nonsense has been written about diseases of the antrum than upon almost any pathological condition of the oral tissues. The most elaborate treatment has been advised, without a comprehension of just what the condition was. The truth of the matter is, that usual affections of this cavity are readily cured. An ordinary empyema requires little more then that perfect drainage be secured, and this may easily be obtained by a proper opening at the lowest point. But this must be sufficiently large to prevent its closing. After an operation of this kind, little treatment is usually demanded.

But it is essential that the operator should have the ability exactly to diagnose the condition, and if opening is demanded to know how to make it at the right point and in the proper manner. Unless he feels competent for this, it is his imperative duty to refer the patient to some one who makes a specialty of this kind of work. We often criticise medical men because they do not promptly recognize dental lesions, and continue for an indefinite length of time to treat some simple oral difficulty that a dentist could cure in a moment. But we ourselves too often are criminally culpable for failing to recognize something that is out of our province, and by continuing to dally with some tumor or neoplasm that should have been promptly referred to the surgeon, the patient is put in imminent danger of losing an essential organ, or even life itself.

GETTING ACQUAINTED.

One never knows a man until he has seen him in his private retreat, in his den, in that portion of his professional domicile that is not kept for visitors, and where he spends the time that is peculiarly his own. When one calls upon a professional friend, and is seated in the reception room devoted to strangers, he is making little progress in forming an acquaintance. We have made such calls in foreign lands, where we were received with all the courtesy imaginable, and when we retired we felt that we knew the man no better than before. There are friends whom we have met annually for many years at our professional meetings, but whose acquaintance we have really never made.

But when we have visited some dentist who took us into his operating room, or better still, into his laboratory, and we have an opportunity to see with what he surrounds himself when he is beyond the observation of his ordinary acquaintances, then we have felt that we knew the man as he really was. It brings the visitor very near, but it is a dangerous experiment to try. A single glance will enable the keen observer to read his man completely. It is not alone the evidences of dirt and general untidiness which will proclaim him a slovenly operator, but the condition of his instruments, the little evidences of ingenuity in making the most of his surroundings, the manifestations of care for the comfort of his patients, the appliances for facilitating work and the means just at hand for perfecting operations, the general air of serviceability and "handiness," all tell the tale of the professional rating of their possessor. The books and journals that are just at his elbow, the papers and evidences of thought, each proclaims the tastes and habits of its owner.

It does not matter that the furniture is plain, and the carpet a cheap one, but the state of his laboratory will a tale unfold that cannot be denied. Even the condition of his lathe will indicate whether he is a careful and competent mechanic, or a mere botch. It will be useless for the dentist to attempt to cover up the indications if his visitor be an observing man. The thing will out, for every file and scraper will have a voice when one visits an operating room or a laboratory that indicates that its owner knows what a good tool is and when it is in order, and that he has sufficient of ingenuity to get the greatest amount of convenience out of his surroundings. When one has looked over the desk and observed that its owner keeps the run of the current literature, that he has the principal text books and that they give evidence of study, what a feeling of respect and admiration comes over him, and how immeasureably that man has grown in his esteem, and how well he feels that he knows him. Such visits give a pleasure that no formal reception, no elaborate hospitality could convey, for one feels that he has been admitted to the intimate companionship, the inner life, the secret temple of a congenial spirit.

MAGNESIUM HYDRATE.

The use of an antacid is frequently indicated in the mouth in cases of acid secretions, erosions, and other like pathological conditions. For these we have for a long time been using precipitated chalk, limewater, and other such preparations. A friend lately sent us a bottle of Phillips' Milk of Magnesia, and this has now taken the place of all other alkalies.

The use of magnesia as a laxative, or mild cathartic, in the form of effervescent citrate, or as Epsom salts, is too well known to need comment. But there are certain inconveniences attending its employment, such as the danger of forming insoluble concretions in the bowels, through its precipitation from the compounds in which it was an element. In its present form it is a complete hydrate, and hence is not subject to precipitation by the neutralization of any of the ingredients which hold it in solution in a compound.

It is pleasant to the taste, and if a teaspoonful be taken into the mouth at bed-time, and rinsed about until it comes in contact with the teeth, it will form an antacid coating which will remain for some time, thus materially increasing the benefits to be derived from it. There is no prepation within the sphere of our knowledge which is so useful in acid erosion of the teeth, and it should be prescribed freely in all such cases. It may be used subsequent to cleaning the teeth after each meal, and should certainly be employed at night and morning.

BIBLIOGRAPHICAL.

A STANDARD DICTIONARY OF THE ENGLISH LANGUAGE. Upon Original Plans. Designed to give in Complete and Accurate Statement, in the light of the most recent Advances in Knowledge and in the readiest form for Popular Use, the Meaning, Orthography, Pronunciation and Etymology of all the Words and the Idiomatic Phrases in the Speech and Literature of the English-speaking Peoples. Prepared by more then Two Hundred Specialists and other Scholars. Volume I. New York: Funk & Wagnalls, 1893.

A comprehensive dictionary is the first essential to the library of every man who makes any pretentions to erudition or scholarship in any department of literature or science. With the growth and changes in the language, the older lexicons that have been the established authorities for generations have become antiquated, and newer ones must take their places. The past decade has seen some great advances made, and at last we may boast of works in this department worthy the age in which we live. It is essential that in selecting a successor to Webster and Worcester the student and scholar should make no mistake, for the choosing an authority in speech and writing is a matter of great moment, and must not be done too frequently.

The Standard Dictionary, about which we have so long been reading and hearing, is now, in part at least, ready for issue. It has not been a hastily prepared work, nor has its compilation been placed in the hands of unknown men. More then two hundred scholars have brought to it the ripest fruits of their knowledge, and have spent years in perfecting it, so that it may be said to reflect the best scholarship of the age. It is reported that the publishers have expended a half million dollars in getting it before the public. All this gives warrant for the belief that the best possible has been done. Yet all this labor and capital might be expended in vain, if the plan upon which the work was done had not been a perfect one.

There are a number of special features which distinguish this dictionary. In the first place, the etymology, which immediately succeeds the definition, is remarkably clear and accurate. Then the definitions are concise, yet full and specific. The various shades of meaning in the different uses of words are given, and even obsolete significations are fully set forth. Scientific and technical terms are included, and the student of modern science needs go no farther for the exposition of words but lately added to the vocabulary.

There are contained in it more then fifty thousand quotations from standard authors, showing the use which they have made of words, and all these are definitely located by tome and page. There are nearly five thousand illustrations, expressly made for the work, the better to bring to the comprehension of the student a complete idea of the information sought.

Perhaps nothing in lexicography so annoys the average scholar as the diverseness in the pronunciation of many words, especially those which are of foreign derivation. In the Standard Dictionary these disputed sounds and spellings have been referred to a committee of fifty of the best expert philologists, and the consensus of their opinions has been adopted as the first or favored pronunciation, while the others are added in their order. This enables the consultor to know what is that which is adopted by the best scholars, and he feels reasonably sure that he is the most correct when he follows the Standard.

The vocabulary is extraordinarily rich and full. The entire number of words and terms in the best dictionaries is as follows: Stormonth, 50,000; Worcester, 105,000; Webster, 125,000; The Century (in six volumes), 225,000; The Standard, 280,000. Possessing all these points of superiority, with many others, we have no hesitancy in pronouncing this the best dictionary of the English language extant, and we most sincerely advise the readers of this journal to purchase it, and rest secure in the fact that they have the very highest authority procurable. There will be no necessity for the possession of other dictionaries, for the whole science of the English language is comprised in this.

The work is issued in single, and two volume editions, and is sold only by subscription. Any one wishing to procure it, if an agent shall not have called upon him, need only address the publishers.

POPULAR ESSAYS ON THE CARE OF THE TEETH AND MOUTH. By Victor C. Bell, A. B., D. D. S. New York: Published by the Author.

This little volume of over one hundred pages was, as its title indicates, written for the purpose of diffusing general information upon a subject that should interest every man, woman and child. There is no question that the condition of the oral cavity has a very important influence upon the general health, aside from the very idea of comfort and external appearance. If the knowledge which it contains could be conveyed to every parent, there is no doubt that it might result in a lengthening of the average term of existence.

Especially should the simple truths which the book inculcates be taught to every school child. Works on general hygiene and physiology are included in school text-books, but here are some of the most essential truths in both, together with much other special knowledge, in a condensed form, and in such guise as will prove interesting even to children. Some such work should be included in the curriculum of our common schools.

The book is not written from a professional standpoint, and is not intended for the special study of dentists, yet there is much in it that would prove of benefit to the practitioner. It is simple and easy in its diction, and very attractive in its general appearance. Its place in the dental office is upon the center-table, where it may be perused with pleasure and profit by waiting patients. Under such conditions its high ethical tone would tend greatly to the profit of every competent dentist.

THE PHYSICIAN'S WIFE; And the Things that Pertain to Her Life. By Ellen M. Firebaugh. With portrait of author and 44 photo-engravings of original sketches. In one Crown Octavo volume of 200 pages. Extra Cloth, $1.25 net. Special Limited Edition, first 500 copies, numbered, and printed in photo-gravure ink on extra-fine enamelled paper, bound in Half-Leather and Vellum Cloth, $3.00 net. Philadelphia: The F. A. Davis Co., Publishers, 1914 and 1916 Cherry street.

We have often read of the trials and tribulations of the physician himself, but who has bestowed a thought upon the patient woman in his home, who must share all his vexations, and who has a right to a part in his triumphs. We sympathise with the hard-worked doctor who is robbed of his natural rest, but we forget that there is another who must suffer with him, and who has not his professional interest in each case to sustain her.

The author of this work — the wife of a physician — is a charming writer, and her sketches of the lives of both are graphic, and at times extremely pathetic and touching. They will appeal to the sensibilities of the wife of every practitioner, whether of general medicine or any of its specialties.

No one in any way connected with medicine can better show his appreciation of the tender sympathy of his own wife, than by purchasing this beautiful and charming volume and placing it in her hands.

CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY. For 1893. B. H. Catching, D. D. S., Publisher, Atlanta, Ga.

For a number of years Dr. Catching, formerly editor of *The Southern Dental Journal,* has presented at the close of each year, in a single volume, the cream of American journalistic literature. The several volumes thus form an epitome of the advancement made in the several fields of dentistry. The volume for 1893 is not a whit behind its predecessors in interest. It contains suggestions in operative and prosthetic dentistry, crown and bridge work, orthodontia, dental medicine, oral surgery, and other branches, that are of inestimable value. Any dentist who is not a subscriber to and reader of all the journals published should obtain a copy, for it contains matter that he cannot well do without. Next year it is promised that the work will be extended in its scope, and embrace the professional literature of other nations.

TRANSACTIONS OF THE ILLINOIS STATE DENTAL SOCIETY. Twenty-ninth Annual Meeting, held at Rock Island, May 9 to 12, 1893.

The proceedings of the Illinois State Dental Society are always of great interest to all interested in dentistry. Numerous papers of value are presented, while the discussions, because of the exceptional intelligence of many of the members, are certain to bring out many excellent suggestions. The latest volume is no exception to the rule, and is well worthy careful study.

TRANSACTIONS OF THE DENTAL SOCIETY OF THE STATE OF NEW YORK. Twenty-fourth and Twenty-fifth Annual Meetings, May, 1892 and 1893.

No volume of these proceedings was issued last year, the whole now being printed together. It makes a very complete and handsome book, which reflects credit upon the Secretary, Dr. C. S. Butler, of Buffalo, upon whom devolved the labor and responsibility of its issue.

ELEVENTH ANNUAL COMMENCEMENT OF THE CHICAGO COLLEGE OF DENTAL SURGERY, AND THE NINTH ANNUAL MEETING OF THE ALUMNI ASSOCIATION, held in Chicago, March 28, 1893.

CLINICAL NOTES UPON CHANCRE OF THE TONSILS. With analyses of fifteen cases. By L. Duncan Buckley, A. M., M. D. Reprinted from transactions of the Medical Society of the State of New York.

THE PHYSICIAN IN LITERATURE. By Arthur W. Hurd, A. M., M.D., Buffalo, N. Y. Address delivered at the opening of the Medical Department of the University of Buffalo, September, 1893.

TRANSACTIONS OF THE AMERICAN ACADEMY OF DENTAL SCIENCE, December, 1889, to February, 1893. Reprinted from *The International Dental Journal.*

THE ORIGIN AND EVOLUTION OF THE HUMAN FACE, AND THE DESCENT OF FACIAL EXPRESSION. By Alton H. Thompson, D. D. S.

IMPROVED SURGICAL ENGINE, AND NEW INSTRUMENTS FOR BONE OPERATIONS. By M. H. Cryer, M. D., D. D. S. Philadelphia: Reprinted from the journal of the *American Medical Association.*

THE TEETH DURING PREGNANCY. By A. Hugh Hipple, L. D. S., D. D. S. Omaha, Neb.: Reprinted from *The Medical Standard.*

PROCEEDINGS OF THE NATIONAL ASSOCIATION OF DENTAL FACULTIES. Tenth Annual Meeting, held in Chicago, August, 1893.

CURRENT NEWS AND EXCERPTS.

ALAS! ALAS!!

The sad, sad condition of American dental schools, especially those of twenty years ago, still rests with overwhelming weight upon the mind of our good brother of *The Dominion Dental Journal.* He really cannot rest because of what once existed here. We, upon this side the line, have much to cheer us in the fact that a school that will probably furnish us a model for all time has been started in the Province of Quebec, and we regard with as much of complacency as possible the prospect that the superior advantages offered will induce a migration of students to Montreal, and leave us as bare as a plucked fowl.

Upon both sides of the great lakes it is a singular fact that the would-be instructors of experienced teachers, the men who alone seem capable of properly conducting an educational establishment, are those who are non-graduates themselves. The only men who know all about the schools are those who have never attended them. Singular, is it not, that those who have had college training, and who perhaps have had years of experience in teaching, are the very ones who know nothing about it? Or perhaps it is the corrupting influence of a teacher's life, which so debases them that they necessarily become dishonest, sordid, and possessed by an insane desire to ruin their chosen profession.

A BAD CASE.

At the last meeting of the New York State Dental Society a great deal of the time of the sessions was taken up by papers and discussions upon pyorrhœa, and there was a continuous stream of talk about it in the reception rooms and corridors of The Delavan, where most of the members "hung out," as Mc. would say.

Stopping in the house was a scion of one of New York's blue-blooded families, who had apparently come up the river for a grand spree. About midnight he had acquired a "jag" of colossal proportions, when he entered the elevator with a delegation of dentists. "I shay," said he, "whatsh ish perrora?" "What," answered Van.; "I don't understand you." "Thish yer perrira—prory. My muzzer's got it—bad. Cost her more'n thousand dollars. That son-of-a-gun Moselle's got 'er most of it, and she aint well yet. Shay, guess it mus' be worse 'an 'er itch." And there were those present who agreed with him.

Change of Editors.—With the commencement of the year, Dr. A. W. Harlan retires from the editorship of the journal which he founded, *The Dental Review* of Chicago. Dr. Harlan has raised it to a high pitch of popularity and usefulness, and he can look with a great deal of complacency upon that which he has accomplished. He is succeeded by Dr. C. N. Johnson, who has for some years been the assistant editor. Dr. Johnson is a skilled and able writer, a close observer of the signs of the times, and withal, one who is dominated by a high ethical tone. *The Review* will not lower its standard under his editorial management.

The Transactions of the World's Columbian Dental Congress.—These are now nearly ready for the final proof-reading. It is, therefore, very desirable that those who want extra copies, and those who would like to subscribe for them do so at once, as it is the intention of the Committee of Publication to print only a sufficient number of copies to supply the members of the Congress and those who have subscribed for them. The subscription price is $10.00. Subscriptions should be sent to Dr. John S. Marshall, Treasurer, 1003 Venetian Building, Chicago, Ill.

POPULAR SCIENCE NEWS.

The tensile strength of a bar of aluminum ¼ inch square and three feet long is 26,800 lbs. per square inch. A bar twenty-three thousand and forty feet long is able to support its own weight. This makes it equal to steel.

The chemical changes undergone by starch in the mouth when it becomes sugar, may be represented by the following equation: The composition of starch is represented by the formula $(C_6H_{10}O_5)N$. The number of times $C_6H_{10}O_5$ is repeated in the molecule is not definitely known. It has been assumed by physiological chemists that its true composition is $(C_{12}H_{20}O_{10})_6$. The action of the saliva enzyme on starch is further assumed to be similar to if not the same as with malt extract. The product in both cases is malt sugar (maltose). The reaction is represented as:

$$\begin{array}{llll}(C_{12}H_{20}O_{10})_6 & + 4H_2O = & (C_{12}H_{22}O_{11})_4 & + (C_{12}H_{20}O_{10})_2 \\ \text{Starch} & + \text{Water} = & \text{Malt Sugar} & + \text{Dextrine.}\end{array}$$

ANOTHER DEGREE.

The University of Michigan, at the suggestion of the faculty of the dental department, has established a new degree—that of Doctor of Dental Science—as a kind of post-graduate honor, to be conferred upon those regular graduates who shall spend yet another year in certain special studies. We cannot but think this a great mistake. There are too many degrees now. Every additional one detracts from the value of the D. D. S., which we are endeavoring to make in dentistry what the M. D. is in medicine. If all kinds of side degrees were to be allowed, how long would that of Doctor of Medicine maintain its respectability? If every college is to have a special degree of its own, we may bid farewell to all idea of a united profession that shall command honor at the hands of the world. When Harvard organized its dental department it took the lead in an important movement, but when it established a separate degree it did a great deal to neutralize it.

A NEW BOOK.

Dr. C. F. W. Bödecker, of New York, has nearly completed the writing of a new text book upon Dental Anatomy and Dental Pathology. The work will be published by the S. S. White Dental Manufacturing Co., and the manuscript is already in their hands. It will be quite voluminous and complete, and will contain over three hundred original wood cuts, illustrating development and disease. There is no work of the kind now published in America, and the field is an important one, while the qualifications of Dr. Bödecker for the task are indisputable. We shall, therefore, look for the book with considerable anxiety, and shall hope to see it occupy a prominent place in our literature.

UNIVERSITY OF BUFFALO, DENTAL DEPARTMENT.

The Third Annual Commencement exercises will be held in Music Hall, on the evening of Tuesday, May 1st, 1894. The Curators' examination will begin at nine o'clock of that day, and the annual banquet will be given immediately after the graduating exercises. Members of the dental profession are cordially invited to be present during the day.

A. P. SOUTHWICK,
Secretary.

AN UNPRECEDENTED HONOR.

Prof. W. D. Miller, of Berlin, has been appointed Extraordinary Professor in the Medical Faculty of the University of Berlin. He is not only the only American who has received such an honor in Germany, but no other dentist, even among the natives, has ever been advanced to such a position.

Such an appointment means far more in Germany than it would here. It is a government position, for the University is a Royal institution and appointments are made by the "Kultus Minister." Prof. Miller was offered the place some time ago if he would become a German citizen, but he declined the conditions, as he thought more of his American citizenship than of foreign honors. Now he receives the appointment upon his merits, and without stipulations.

DENTAL SOCIETY OF THE STATE OF NEW YORK.—The twenty-sixth annual meeting of the above Society will be held in the Y. M. C. A. Building, Albany, on the 9th and 10th of May next, at which time the following essays will be presented:

S. H. Guilford, D. D. S., Ph. D., of Philadelphia: "Crown and Bridge Work; a Protest Against Some of its Abuses."

J. Allen Osmun, M. D. S., of Newark, N. J.: "Can Pyorrhœa be Cured?"

W. J. Turner, M. D., D. D. S., of Brooklyn: "The Use of Peroxide of Sodium as Recommended by Dr. E. C. Kirk."

R. M. Sanger, D. D. S., of East Orange, N. J.: "The Sixth Year Molars."

A cordial invitation is extended to the profession.

C. S. BUTLER, *Secretary*,
Buffalo, N. Y.

F. T. VAN WOERT, *President*,
Brooklyn, N. Y.

PIPE CLAY DISKS.—That fresh pipe clay will stick to the lips readily is, we think, well within the knowledge of most, and there seems no reason why pipe clay disks should not be placed over the orifice of Steno's duct, and so aid us in controlling the flow of saliva, Such a plan is suggested by a writer in the *British Journal of Dental Science*, who speaks favorably of the method.—*Journal British Dental Association.*

Twenty years or more ago these disks were used in this country quite extensively, and Dr. A. P. Southwick, of this city, devised clamps for keeping them in place, and pliers for handling them. We have some of them in our cabinet of curiosities at this day. The advent of the rubber dam caused their abandonment here, and American dentists have never had occasion to take them up again.

BLACK RUBBER.—After the polishing of black rubber plates there will sometimes be noticed a grayish appearance upon the surface. This is due to the elimination in some way of the coloring matter, which leaves exposed particles of the rubber in their natural hue. These may be removed by the application of carbon bisulphide, which is a solvent of rubber. Chloroform will partially remove it, but the other is best. As the carbon bisulphide has a very offensive taste and odor, the plate must be carefully washed after its use.

KANSAS CITY DENTAL COLLEGE.—The commencement exercises of the twelfth year o the Kansas City Dental College were held in the Grand Avenue Methodist Church, March 5, 1894. The whole number of matriculants for the session was one hundred and thirteen. The number of graduates was sixteen. The degrees were conferred by C. B. Hewitt, D. D. S., President of the Faculty. The annual address was by Alton H. Thompson, D. D. S., of Topeka.

DENTAL PROSECUTION.—For two years and a half C. H. Land, of Detroit, who has as much of notoriety as fame in dentistry, has been prosecuting a suit in the courts against Prof. J. Taft, who, he complains, has expressed an opinion of his professional standing in terms that were not flattering. The words were spoken, we believe, at the time of the trial of Land before the Michigan State Dental Society for unprofessional conduct. The case was lately tried, and resulted in a disagreement of the jury. If everyone who, whether right or wrong, believes that C. H. Land is unworthy professional recognition should express himself to that effect, and if Land were to bring suits against all such, we fear that the courts of Michigan would be clogged by an excess of business at once. Prof. Taft deserves the sympathy of every professional man. When he gets through he will have to go and bury his clothes, we fear.

THE ORIGIN OF THE SUN'S LIGHT AND HEAT.—The sun gives through the spectroscope a continuous spectrum. Burning gases give only a broken spectrum. Burning metals in their own spectrum give bright lines. Burning in the sun they give dark lines. The spectrum of the sun's photosphere during an eclipse shows that the flames shooting out many thousands of miles are burning gases, usually hydrogen.

ELEVENTH INTERNATIONAL MEDICAL CONGRESS.—The Eleventh Congress will meet in Rome in April. A section of Odontology has been organized, and it will be attended by many European dentists. We fear there will be but a small delegation from America, not because of a lack of interest, but from the fact that it is impossible for American dentists to get away for their vacations so early in the season. ,

PERMANENT SEPARATION.—Dr. Leonard W. Bickle, in *The Australian Medical Gazette*, advocates the permanent separation of teeth, according to the Arthur system, as a prophylactic against caries, and says that it has stood the test of twenty-nine years practical work. It did not stand five years practical test in this country, and was long since abandoned, after doing almost incalcuable injury.

THE BONWILL MALLET IN PYORRHŒA.—Dr. F. T. Van Woert puts the Bonwill Mechanical Mallet to a novel use. He inserts a small chisel in it and then employs it in removing the calcific nodules from the roots of teeth affected by pyorrhœa. It is very effective, for it can be so directed that it will not unnecessarily lacerate the tissues.

AN HONOR TO HIS PROFESSION.—Sir John and Lady Tomes, of England, lately celebrated their golden wedding. Sir John Tomes was one of the pioneers of reputable dentistry in his country, and for his high attainments received the honor of Knighthood at the hands of the Queen.

GOLD IN DENTISTRY.—A French statistican, Mennier, estimates the consumption of gold for purposes of dentistry to amount annually in the United States to 1,800 pounds. Mennier declares that a century hence American cemeteries will contain more gold than now exists in France.

DENTISTRY IN RUSSIA.—We are in receipt of the announcement of a new dental school in St. Petersburg, Russia, which commenced it course September 25th last.

PROPORTION OF GRADUATES.—Only twenty-five per cent. of the dentists of England are graduates of their schools, but the number is gradually increasing.

THE

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TIN, AND ITS COMBINATIONS WITH GOLD AND AMALGAM.

BY S. B. PALMER, M. D. S., SYRACUSE, N. Y.

Read before the Eighth District Dental Society at its Twenty-sixth Annual Meeting, Buffalo, N. Y., April 24, 1894.

I fully appreciate the honor of being called to read a paper on this occasion. I accepted, however, because I have something practical in the line of work which has received my special attention, that, I trust, will save others from experiments in the pursuit of the same facts. I say facts, because the following conclusions are the result of scientific investigation. Great care has been taken to leave theory out of that which is recommended for practice, to give a short paper, and to use only terms most familiar to every dentist.

As announced, the subject for consideration is, "Tin, and its Combinations with Gold and Amalgam." As may be seen, this includes a large portion of operations for filling teeth. Tin has been used for a long time, and its merits fully recognized. It is soft, easily adapted to the walls of the cavity, is the most compatible with dentine of any of the metals used, is a poor conductor of thermal changes, it oxidizes but slightly, while the oxidation between the filling and walls of the cavity is insoluble, filling the dental tubuli and decalcified dentine, and thus arresting further decay. This constitutes the antiseptic properties claimed for tin. But it fails to meet all the conditions for permanency. It is non-cohesive, and when packed into a cavity in layers it will flake off in like manner. With suitable instruments and varied manipulation that difficulty may, perhaps, be overcome, but this is not within the limits of this paper.

Some years ago, Dr. Frank French, of Rochester, wrote me, asking for the chemical relations or combinations of tin and gold. I could not answer, nor have I found a solution, until by observation and experiments I have settled upon the following as scientific and correct. These three effects are visible:

First. Tin and gold unite in fillings, and there is no separation at the union.

Second. Tin and gold work well together where tin comprises most of the filling, and gold is added as a protection from wear, or for appearance.

Third. When tin is used as a guard filling, under gold, or as a lining, and the tin exceeds in thickness three leaves of foil, a portion of the tin next the dentine will be oxidized and remain a soft black paste, no decay being found so long as the oxide remains, but as it is too soft to stand the brush, toothpicks, etc., it is unreliable.

Thus we have three distinct effects and corresponding conditions. Let us look for the causes. The one great hindrance to progress in dental science has been failure to find the source of each particular effect.

First. The union of tin and gold in the mouth. The two metals must be in contact. The process by which the metals unite is electrolysis. It is a law of electrolysis that no single element can be decomposed; also that fluidity is essential for molecular movements. When, therefore, gold and tin are united or compacted in a filling, the two metals within remain distinct and unchanged. But upon the surfaces exposed to moisture, even to that in porous dentine, the tin is oxidized by reason of the current set up by the gold. Thus the tin is dissolved, and by the current, as in the electro-plating bath, the atoms of tin are attached to and fastened upon the gold, similar to plating gold with tin. The tin plating thus formed will not exceed the thickness of two leaves of foil.

To make this plain: If mercury is placed on gold or silver it will amalgamate until the mercury is satisfied, and it will go no deeper unless more mercury is added. Mercury is a metal in a state of fusion, while the tin is held in a liquid state. The tin does not penetrate the gold to any great depth, but the gold influences the tin by mutual induction, as zinc affects iron to render it negative. Thus an amount of tin is preserved to the thickness of two folds of tin foil. There can then be no separation of tin and gold, because the tin which is united with the gold is negative to the other portions of the tin. When tin constitutes a portion of the filling, the two metals work well, as the tin is but slightly oxidized and not dissolved by galvanic action. But when only three or four thicknesses of tin are used, the one or two leaves which will be in excess of the preserving influences of the gold, with no body of tin back of it, are in danger of its losing their integrity as a metal, and becoming dissolved as before mentioned. This difficulty may be obviated by mixing the metals in the foils by alternate layers, forming the leaves into tape blocks, or rolled into cylinders. Thus guard fillings, or whole fillings, may be made, which have many advantages over amalgam. The alloy thus formed resembles amalgam in color and hardness, does not shrink, and preserves dentine as well as tin alone. Any amount of gold may be used without injury, and the excess which is not taken up in forming the alloy will show the gold bright and clear.

On the other hand, an excess of tin will be marked by lines or pits in the filling showing where tin has been dissolved. It has been mentioned that this chemical action occurs only on the surfaces exposed to moisture. I will add that in building up large fillings it is important to have the filling wet when inserted; then the whole plug is as solid as an amalgam. The moisture sets up electro-chemical action, with the results already stated.*

One more statement in relation to tin and gold, and we will take up the next combination. About thirty-seven years ago I filled the superior incisors for a lady patient who could not afford the money to pay for gold, while I could not afford the reputation to use amalgam. The cavities were approximate, and the enamel on lingual surfaces badly broken away, with the labial surfaces transparent, yet well preserved. The cavities were lined with non-cohesive gold and filled with tin. I saw the fillings several years after. The gold was visible through the enamel and the fillings were perfect, no appearance of recurring decay. This case with others was reported at a society meeting, and probably published. I quote the following from the remarks of Dr. C. S. Stocton, Newark, N. J., at the World's Columbian Dental Congress:

"I recall two fillings that I saw only a short time since, which were put in twenty-three years ago, I think. I filled those teeth by a plan recommended by Dr. Palmer, using mats of Abby's soft foil packed up against the labial surfaces of the enamel, filling the balance of the cavity with tin foil. They are in as good condition to-day as they were twenty-three years ago."

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* Since writing the above, I placed a layer of tin foil upon a plate of 22 carat gold, and inclosed it in plaster, with a case, while vulcanizing. The two metals were united, forming an alloy of gold and tin.

Thus you see that experimenting with metallic fillings was commenced many years ago. This, together with the study of oral electricity, and unusual opportunities for personal experience, is my excuse for pretending to teach the younger members of this society.

Now let us study the relations of tin and amalgam. This we cannot do without a knowledge of some of the properties of amalgam not given in the books. A few words will excuse me from lengthy remarks on copper amalgam, which I have used only experimentally. The teachings of Nature's simplest text-book, the galvanic battery, would enable any one familiar with electrical science to know that an amalgam composed of two single elements could not be relied upon. Copper and mercury are brought together and form a hard mass, still each metal retains its individuality. Heat the mass and the mercury will be partially expelled, the compound becoming plastic, which is not the case with an alloy of two or more metals. The relations of copper and mercury are the same as copper and zinc in a battery, only that there is no great electrical difference or potential between copper and mercury. Like saliva, the positive and negative relations are liable to change. At times the copper becomes the positive element; that is, the fluids may oxidize copper more readily than mercury, in which case the filling will appear white from excess of mercury on the surface. That being the case, the mercury is soon worn away. When the affinity of matter in the mouth is stronger for mercury, the filling appears brown and spongy, and is too soft to stand abrasion. When the action is equal, or so nearly so that the oxidation on the surface unites to form a black, hard compound, then it is that one metal protects the other, and copper amalgam is pronounced a success. The only use I make of copper amalgam is to line large cavities in devitalized teeth, when the dentine is very soft. With a ball burnisher a thin lining can be quickly put in, and the cavity filled with alloy amalgam, the object being to furnish an amalgam surface to the dentine which is finer grained than the filling, and also to furnish oxide to fill the dentine.

We will now take up the amalgam in general use, which consists of an alloy containing two or more metals, and which is cut with a file or in a lathe. The setting of amalgam can be well understood by the process already described in the combination of tin and gold. In amalgamating the filings of the alloy, mercury is absorbed, or enters into the alloy more or less, according to the fineness of the cutting. The excess of mercury is forced out, and the filling inserted. The amalgamation of the mass is by no means completed, but continues until the mercury has been taken up and firmly held in combination. Then it is that the mass has become hard. This process requires more or less time, for two prominent reasons, the age of the alloy, and the thickness of the filings, or shavings. Fine filings, when first cut, will set nearly as quick as oxy-phosphate.

Let us now consider the condition of an amalgam filling which has gained its maximum degree of hardness. It is not an alloy, as if all the metals were fused by heat. There are two distinct conditions in an amalgam plug. There are the coarser particles, the center of which contains less mercury than the other portions, and there is the bulk of the mass, which is thoroughly amalgamated. In all high grade amalgams mercury is the positive element, the one to be most acted upon. We said that in the combination of tin and gold, where there is an excess of gold it remains distinct, so that the unamalgamated particles are negative to the portions containing more mercury. But there is also local electric action going on upon the surfaces of all amalgam fillings that do not protect themselves by sulphates or oxides of the metals.

Amalgams which will stand the tests for shrinkage perfectly, if filled upon soft dentine for a few years, on removal will appear rough, blackened, and show none of the fine lines of adaptation to the dentine that they would have done on removal at first. This is according to a well-known law which can only be set aside by changing conditions. The cause of shrinkage and failure of amalgams after many years, is from galvanic action between the unequally amalgamated portions of the plug and the other portions containing more mercury, much the same as between copper and mercury. The rough surface of an old amalgam filling is caused by the dissolving of the mercury by local currents, generated by the potential difference between the positive and negative relations between the metals. This principle is the great cause of failure, and we have to a considerable extent corrected the difficulty in the use of copper in the alloy, depending upon oxidation to change the positive relations of the dentine to negative; but when the local action is so vigorous as to produce acid, the lime constituents of the dentine are attacked, and the same results follow as in the use of gold.

Study of a single galvanic battery affords a lesson, and I think a remedy for this difficulty, by which we may use amalgam without copper. The lesson is this: Commercial zinc contains other metals, among which iron is prominent. With pure zinc in given liquids, used in some forms of batteries, there would be no consumption of zinc with an open circuit; but with commercial zinc with an open circuit there is local action, and the zinc is dissolved without contributing to the general current. That is analagous to an amalgam filling. There is local action and consumption, which are often taken for shrinkage, the cavity being also enlarged.

The remedy adopted to prevent local action on zinc, is to amalgamate the plate, which neutralizes all local differences, only one metal, mercury, coming to the surface. Reasoning from this fact, and knowing another quite as practical, that tin fillings do not shrink and that no secondary decay appears, then we can use amalgam free from copper by lining cavities with tin foil. I know that local action is done away with, that shrinkage cannot occur, that dentine will not be dissolved, and I believe by this that we get the combined benefits of tin for tooth preservation, and of amalgam to withstand attrition.

Another aspect of amalgam fillings is when two or more pieces have been joined at different times. After years the line of junction will be found distinct and depressed, and occasionally separation is complete. The cause is this: That portion which acts as solder to unite the pieces contains more mercury than the filling on either side. Consequently it becomes a thin, positive element, between two elements negative to it, with results as stated. The remedy consists in amalgamating the surface of the old amalgam and covering it with a layer of gold foil, filled upon the gold, which at once disappears. Joints thus treated become negative to the fillings proper, consequently the union is preserved.

In closing, we mention combinations of gold and amalgam. The principles are the same as those already mentioned, therefore little more need be said to make the application. When gold and amalgam are to be used in the same tooth, by all means unite the two, or there will be a current passing from one to the other through any conductor that reaches from one to the other. Any sensitive person can realize this by covering with the tip of the tongue the two fillings. When the connection is made by uniting the fillings, no current will leave the metal to effect the taste or dentine, and the union of gold and amalgam is ever perfect, because the mercury takes up gold enough to make the joint negative to the amalgam, so that if the fillings were placed in dilute nitric acid, after the amalgam should be dissolved, that layer which composed the joint would be found intact with the gold. Amalgam when connected with gold becomes positive, and consequently shows oxidation to blackness. This, however, is a benefit, inasmuch as it greatly overcomes local action, which has already been mentioned.

Amalgam is good to use as a guard. filling under gold, and particularly in approximate cavities in bicuspids, where the cavity extends up too far to allow the application of the rubber dam. Amalgam may be used to fill the root portion, and when set the dam can be applied and gold used to complete the filling. On account of the local currents which are present with amalgam, I much prefer tin prepared as before mentioned. There is much more disturbance between two approximate amalgam fillings than between two of gold. Therefore it is better to fill with tin, or tin and gold, at the cervical border, and finish with amalgam, because tin is a poor conductor as compared with gold or amalgam.

According to Cassidy, the conductivity of the principal metals are rated thus:

Silver,	1,000
Copper,	736
Gold,	532
Tin,	145
Iron,	119
Lead,	85
Platinum,	84
Dentine (normal moist),	15

Amalgam is not given, but from the silver which enters into its composition it would probably be above tin.

THE DOCTORATE DEGREE AND THE CODE OF PROFESSIONAL ETHICS.

The Doctorate Address delivered at the Commencement Exercises of The Chicago College of Dental Surgery, April 30, 1894,

BY W. C. BARRETT, M. D., D. D. S., PROFESSOR OF DENTAL PATHOLOGY.

For the last time, the Class of '94 in The Chicago College of Dentistry is called upon to listen to an address by one of its Professors. I might, at this time, perhaps, with some show of propriety, review the past, and present you with a résumé of that which has been; or, I might weigh you down with final words of advice as to your future professional career in life. I shall do neither. That which is behind you is irrevocable, and may not be changed. That which is before you will materialize in due season, and if you have given proper heed to the precepts of your teachers for the past three years, you will be prepared to meet it as it comes. If you have not, it is too late for me to attempt to remedy it by any further professional instruction. I shall, therefore, choose rather to attempt some inquiry into the signification of the ceremonies of to-day; to review the rise and progress of professional study, and the origin and source of the usually accepted ethical laws which are supposed to govern all professional men.

In tracing the course of professional advancement, I shall not endeavor to go back of that remarkable movement in educational affairs which opened with the eleventh century, and which resulted in the establishment of schools which, in their modified forms, are existent to-day. Were I to do so, the whole of the time at my disposal might be spent in briefly considering the astronomical lore of the ancient Chaldeans, the literature of the Chinese, or the knowledge of physics exhibited by the

Egyptians. Greece and Rome had their schools of philosophy, of religion, of letters, and of oratory. Indeed, they were, in some measure, the prototypes of the institutions afterwards founded, but we need not advert to them now.

Christianity succeeded to paganism, and in the tenth, eleventh, and twelfth centuries, the Church, which had its center at Rome, was all-powerful. It had early foreseen the necessity for a priesthood that should be educated above the masses of the people. Theological schools had been founded, in which the neophytes were instructed, not only in matters ecclesiastical, but in the elements of law and of medicine as well. The priest then absorbed whatever of erudition existed, and became the supreme authority, not alone in matters spiritual, but also in temporal affairs. There were few, aside from him, who could read or write, so that all records, and all interpretations of them, were practically in his hands. The early Christian schools were Church institutions, and were usually connected with some monastery or cathedral, religious instruction being the primary object, the other branches of the limited curriculum being chiefly taught to render the priest more powerful and more influential with the people in all the different walks in life. What little of medical knowledge existed was mainly centered in the ecclesiastics, who thus became the apotheosis of all that was mysterious.

Gradually the teachings of the ecclesiastical seminaries became broader, and students from all quarters flocked to the schools of Italy, which became the most famous of any in Europe. These pupils were mostly foreigners, and received but scant protection from the laws. They banded themselves together for mutual protection and sympathy, and secured an organization at Bologna, and this was the origin of the famous University of that city. Under their various masters, some were pursuing studies in philosophy, others in law, others in divinity, the advantages offered attracting new students, until ten or twelve thousand were gathered in that old Italian city. Though Christians, their text-books were almost exclusively pagan authorities, like Aristotle, Capella and Boëtius.

The study of medicine was first pursued as a separate science at Bologna, about the year 1200. This, in time, led to the organization of separate colleges, in the fourteenth century. They were endowed institutions, and students were furnished pecuniary assistance.

The University of Paris was founded in the thirteenth century, and it became the model upon which were organized the institutions at Oxford and Cambridge, in England. The student in the Paris University was a bachelor in name, for as in the early Catholic seminaries they were trained mainly for the priesthood, celibacy had become a tradition among seekers after learning. The term Bachelor, however, did not necessarily convey the same meaning that is attached to it to-day, but it was used to denote a pupil, as that of Master did a teacher. The whole work of the early universities was to prepare a man for professional life, in contradistinction to that of trade or business. Thus, as early as the twelfth century, a distinct line was drawn between those who were educated, and who devoted themselves to professional affairs, and those who pursued the ordinary avocations of life. Those who had attended the schools and studied under the great masters, formed a class by themselves, and had nothing in common with trade. They were bound by certain special regulations, and the traditions of the schools. Their rules of conduct were much more strict than those of other people, and a scholar might not descend to that which an ordinary mortal could practice. These traditions crystallized into certain fixed laws, which were the origin of the ethical regulations that obtain in all professions to-day.

The great English university of Oxford was originally a monastic school, and was under the direction of the monks until a comparatively late day. Its growth was gradual, its curriculum broadening with the progress of time. Wealthy men or organizations built Halls about the seminaries, as residences for students. Foundations, or endowed separate colleges, were added from time to time, each of which was originally intended for some special teaching. University College was founded in 1249, by William of Durham; Balliol College in 1263, by John Balliol, famous in Scotch history; Merton College in 1264; and thus college after college was added, the system of education being gradually broadened, each college opening up something new, until there were about twenty. All these were federated under a university head, but each proceeding according to its own separate rules and regulations.

Reformations and improvements were from time to time introduced, not only in methods, but in the morals of the different colleges. The students who attended them were destined for professional life, or were the sons of men of wealth and rank. For centuries no university man might engage in trade, or hold and practice ideas or methods that were common to the business world. That is largely the case in Europe to-day, and hence the shock to their prejudices when, as in America, those who have a university education go into business, and violate the ethics of professional life. University men were supposed to be "gentlemen;" that is, those who were above trades. They might associate on equal terms with the landed gentry and the nobility, while the most eminent merchant or manufacturer was debarred. This feeling was universal, and has continued even to the present time.

One of the great reforms in Oxford was brought about by John and Charles Wesley, and Whitefield, who commenced a movement that has revolutionized the world. They violated all the old professional and college traditions, by setting apart as preachers or clergymen men who were not university men, and this was largely instrumental in arraying against them and their new sect all professional men of every class. The Methodists in England to-day comprise very few of what are there called educated men, because of this introduction into a profession of those who had not been specially educated for it.

In America, the universities belong to four classes: First, those proceeding from original historic colleges, like Harvard and Yale. Second, those established by the different States, like Michigan and Virginia. Third, those avowedly sectarian, like Princeton and Trinity. Fourth, those founded by private benefactors, like Cornell and Stanford. Harvard was founded in 1638, and Yale in 1701. The latter was at first a Congregational college, but later it became non-sectarian. Our American universities are unlike the English ones, in that they are single schools, with departments for the purpose of affording opportunities for study in some special lines, while the great English universities are composed of separate colleges, the students and teachers of which are quite segregated.

The professional colleges, as distinguished from the literary, are the outgrowth of modern methods. Medicine, as a profession, as I have already said, was first organized in the University of Bologna, in about the year 1200. There was later a famous school of health at Salerno, in Italy, but until quite modern times, medicine was an integral part of a university education. In the old universities, and indeed it is largely the case in Europe to-day, the graduate of a university was supposed to be qualified to follow any profession, though he was expected to pursue certain special studies in his own field. In Germany, for instance, a university education is considered essential to a properly equipped professional man. Hence the dentist or physician who attempts to follow his calling without it, is not acknowledged professionally, and this accounts for the prejudice that there exists against the graduates of American medical and dental schools.

A university, then, in Europe, may consist of an aggregation of independent colleges, each with its separate faculty and students. But in most of them that faculty is not an organization such as exists in America. Students attend only the lectures that they select, and pay their teachers separately, instruction not being included in the college fees. If the student is to come up for a degree, he must go through a kind of prescribed curriculum, but he may confine his studies to any special course that he may prefer, and may enter and leave when he chooses, and study or not as it may please him. Their life at the university is a peculiar one, and although I have visited both Oxford and Cambridge, and tried to fathom the mysteries of their curriculum and organization, there are many things which only a long residence will enable one to comprehend.

In America, a university is usually a school with different departments, as of literature, art, music, law, medicine, physics, etc., but with a single Faculty, all under one direction, the same professor not infrequently lecturing in several departments. It has always seemed to me that for purely instructive purposes the American university is most effective, although the pupil is not trained in self-government and habituated to self-reliance as in England or Germany.

THE DOCTORATE DEGREE.

I have already said that those connected with these early universities were divided into Bachelors and Masters, the former including the students and the latter the teachers. But the governors of the university of Bologna early saw the advisability of some form of distinction for those who had attained to eminence in learning. The title of doctor, from the Latin *doceo*, to teach, had been applied to certain masters, as a mere honorary appellation. It was adopted at Bologna as a special distinction, and was there first conferred as a third degree, superior to that of master, in the Faculty of Law, in the twelfth century. It is said that Bulgarus, a teacher of law at Bologna, was the first upon whom the new degree of Doctor of Laws was conferred.

The degree of Doctor in Divinity was first conferred at the University of Paris, some time after the year 1150, the earliest recipient being Peter Lombard, a celebrated ecclesiastic of Italy, who became Bishop of Paris in 1159. In England, the degree was introduced somewhere about the year 1200. For a considerable time it was confined to the Faculties of Law and Divinity. This was but the natural consequence of the supremacy of the Church, for it was to these studies that the most advanced students confined themselves, and as the principal avenues to advancement were through the Church and the State, ambitious men chose the studies of Law and Divinity, and they were followed by the great body of scholars. In fact, these were almost the only professions which afforded any opportunity for the ambitious mind, and the learned men were principally confined to them. They absorbed all the titles and distinctions procurable, and so for a long time that of Doctor was only conferred by these two faculties.

Some time in the fourteenth century, the Faculty of Medicine began to confer the doctorate, but at that time the profession of medicine was in a very crude condition. It was largely dominated by the priests, and little was known either of anatomy, physiology or pathology. The remedies used were too often supposed specifics, without therapeutic value, and charms and amulets played an important part in the practice. But some physicians were men of great erudition in literature, and it was chiefly in compliment to such as these that the title was first conferred in medicine.

The degree of Doctor in the Arts is still unknown in England. It smacks too much of the common people, for a man may rise to distinction without the possession of a university education, and the conferring of the doctorate upon such would have a tendency to break down class distinctions. In Germany, however, there is conferred a Doctorate of Philosophy, and it is a distinction that is highly honored. The Doctorate in Music was first granted in the universities of Oxford and Cambridge, in England, and within a short time it has been adopted in Germany.

In America, titles are much more common than in the old countries. Almost every man claims some distinction, and titles, military and civil, are conferred by courtesy. Especially has that of Doctor been sorely abused. It has become a mere mark of vocation, and whoever attempts the art of healing in any department claims and is awarded the title of Doctor, which properly used means a teacher. The chiropodist, the man who ministers to invalid dogs or horses, and he who pulls a tooth, is a "Doctor," irrespective of whether or not he can read and write. The cross-roads, peripetetic tooth-tinker, who has no conception of what a dental college is like, is accorded a title which of right belongs only to him upon whom it has been regularly conferred by competent authority. It is time that this practice was amended, and that the doctorate should be borne only by those who are entitled to it. Probably the practice of calling every dentist a doctor is too deeply rooted to be soon eradicated, but it were well if we could follow the practice in England, and call every man Mister upon whom the doctorate has not been regularly conferred.

The history of the American dental degree, that which this class has but just received, is known to most men. When, a little more than a half century ago, Chapin A. Harris and his compeers endeavored to organize into a profession the somewhat heterogeneous elements that then composed dentistry, he was met by a refusal on the part of Medicine to acknowledge them, or to establish for them a curriculum of special study in medical schools. Recognizing the possibilities that existed in the practice, it was determined to accept the only alternative, and to establish separate and independent schools. In 1839, the first dental college was organized, and the degree selected to be conferred upon those who should complete the course of study was an English one, instead of Latin, and Doctors of Dental Surgery were then first made in Baltimore. Since that time Medicine has acknowledged her young daughter, and departments of dentistry have been added to a number of the universities. Harvard, in establishing the first of these, did what it could to destroy the prestige of the Doctor of Dental Surgery, by establishing a Latin degree, that of *Dentariæ Medicinæ Doctor*, or Doctor of Dental Medicine, instead of Surgery. By far the greater part of our schools, however, retain the original degree, and are striving to bring it into an honored significance. The multiplying of degrees in dentistry is certainly to be deprecated, for each but adds to the confusion and detracts from the importance and dignity of that which alone should distinguish us.

THE LAWS OF PROFESSIONAL ETHICS.

The practice upon which the graduates of this college are about to enter is hedged in by certain ethical laws, or professional regulations, which cannot be transgressed without placing the offender outside all recognition, and submitting him to the charge of being a professional quack. These rules in appearance are somewhat arbitrary, and to him who has but just entered within the sacred precints may appear unjust. Yet all are founded upon proper professional obligations, and are the result of necessity. If a profession is to retain its distinctive character, and if a degree of proficiency is to be secured, the entrance within its pale must be properly guarded, and the conduct of its members must be sternly regulated.

There are three great professions, Medicine, Divinity and Law. The first cares for the physical well being of man, the second for his spiritual good, while the last looks after his vested and communal welfare. Thus the vital interests of all men are entrusted to one of these professions, and when the weight of responsibility is so great, common justice demands that commensurate care should be exercised to prevent the entrance of improper or unqualified persons. Hence a proper term of pupilage is prescribed, at the end of which the student is granted a diploma, certifying to this fact, and formally admitting him within the precincts of the profession. This diploma is the only door of admission into Medicine, and no man, it matters not what his learning or ability, can be considered a medical man without its possession.

The door of admission into Divinity is through an examination by competent authority, after the pursuing of a proper course of study, and the formal induction into the sacerdotal office. In Law, the form is much the same. All professions must carefully guard their immunities against improper conduct on the part of those once admitted, and the laws to secure this form the ethical code by which all are or should be bound. The distinction between a profession and a trade must be carefully maintained, for that is the only means by which imposture and fraud can be avoided. In business, it is possible for the purchaser to examine the wares that are offered to him, and so to be his own judge of their value. The seller may vaunt them unduly, but there is a check upon him, because the article shows for itself. It is not so in a profession. That which is offered is special or professional knowledge, concerning which the purchaser can have no information. He must place himself in the hands of his professional adviser with blind faith, and there is no opportunity for him to know the exact value of the services to be rendered. The methods, therefore, which are quite legitimate to trade, must be prohibited the professional man, and hence he is forbidden to advertise or unduly vaunt his skill. Were this permitted, the temptations to mendacity and deceit would be irresistible to many men, and there would be no opportunity to expose the fraud until too late. Therefore, any member of a profession is forbidden to advertise in the public prints, unduly to vaunt himself, or to publish certificates, under penalty of being proscribed as unworthy a place in a profession. The rule is a necessary one, and must be enforced if there is to be any profession at all, or any such thing as professional honesty and rectitude.

Dentistry ranks as a profession. It is a branch of Medicine, and in that rests its claim to the distinction. Although dentists have existed from the earliest days of civilization, yet until within a few years it has never been organized separately, but was practiced as a part of the great healing art, and, as now, its only claim to professional honor was through the parent Medicine. But do not let us plume ourselves too much upon this. It is not every so-called dentist who is practicing a specialty in Medicine. You, gentlemen, will be what you make yourselves. If you confine your ministrations to the extraction of the organs which it should be your province to save, and to the manufacture of artificial dentures, you will be no more entitled to rank as professional men than the shoemaker, or the manufacturer of wooden legs. It has been my province, during your course, to stand as your teacher in that part of your duties which more closely connect you with Medicine. When you take proper cognizance of pathological conditions, and set about the treatment and cure of oral diseases through the action of medicine, and by hygienic and therapeutic methods, you are practicing a part of Medicine, and are entitled to rank as strictly professional men. The prosthetic department of dentistry, while quite as important from a dental professional stand-point, has no connection with the medical part, for it is something of which the parent profession has no knowledge, and which is not included within it. The dentist, then, should not neglect theory entirely, for if he does he severs the only tie which binds him to the mother profession.

PROFESSIONAL FEES.

The subject of fees, or professional charges, is one that is of historic origin. Most men are aware that, in some foreign countries, in practice among the better class of the people, on the part of men of undoubted professional standing, there is no fee charged, but each patient of the medical man leaves at every visit a sum that is proportioned to his station in life, and his pecuniary ability. This is an honorarium, and not the discharge of a debt, and it is never given directly to the physician, but to his servant, or secretary. On visiting the office of a man in high practice, this secretary will be found in an anteroom, and he it is who arranges for the interview with the doctor. Upon a table before this secretary will be found a dish which contains money. The visitor is expected, when he comes out from the interview, to place in this dish the usual fee, or to hand it to the secretary, done up in a piece of paper. If this custom be not complied with, there will be no demand made for it, nor will a bill for services rendered ever be sent in, but possibly the patient will find himself or herself unable to obtain another interview, unless it be known that he or she desires to be received on the score of charity.

This custom has descended from the old feudal ages. Under that system the land belonged to the feudal lord, and the occupant of it owed fealty to him. He was obliged to render certain service to the lord, and was entitled in return to protection and assistance. The feudal baron stood in the relation of parent to the retainer. While the latter must fight the battles of his chief, he could with confidence look to him for assistance in time of need. If he were ill or wounded, he had but to apply at the castle, where his needs would be attended to as a matter of right. If he suffered injustice at the hands of another, the lord was bound to see him righted. His religious instruction was looked after, and in sickness and death he was certain of spiritual comfort. Thus the feudal baron stood to him in the separate relations of physician, lawyer, and priest, and was bound to render him service in either capacity.

But as these duties were, in most cases, either beyond the capacity and knowledge, or the leisure and inclination of the lord, he kept in his train a priest, who looked after the spiritual welfare and comfort of all, and who, being somewhat learned in the law, acted as mediator and judge in such unimportant disputes as were not of necessity referred to the chief himself. He might also have some knowledge of medicine, and so withal act as physician if the retainers were but few, or if they were many, perhaps a regular "leech," or physician, would be kept among the retinue, and to him the retainers might apply.

Certainly no fees or pay for such service could be demanded, for the baron was bound to care for his dependents. The professions were thus sources of beneficence to the people, and were so regarded. There was no thought of paying for that which was a benevolence. But some grateful retainer might choose to make a present to his benefactor, and this might be accepted, although if it were considered in the light of payment for service rendered, it would be scorned on both sides. When the feudal relations were in after ages dissolved, the common people still looked up to the physician and the priest as their benefactors, and did not scruple to call upon them in their hour of need. But the doctor must live, and so the pious fiction of giving to him an honorarium, or present, by those who were able to do so, became the custom, while the poor people continued, and indeed still continue, to demand his services without thought of any remuneration.

It may therefore be seen that medicine has ever been considered a benevolent calling, and its most devoted followers have shrunk from the thought of placing its practice upon a sordid basis, and so they make no pretense of a regular system of fees. The office of the priesthood is regarded in the same light, and all men are of right supposed to be entitled to their sacred services, without expectation of fees. But as the priest also must live, his support is supposed to be derived from voluntary contributions.

I have thus endeavored briefly to consider the history of the professional relations which the members of this class are now assuming, that they may not enter upon practice without a comprehension of the solemn obligations under which they rest. Gentlemen, you should ever bear in mind the fact that you are to be separated from trade, and from all its methods. You are climbing into positions that are hallowed by the traditions of the centuries. You are the successors of men who in all lands and at all times have been held in special honor. You will possess privileges that are not extended to those who are engaged in the ordinary avocations of life. Medicine has adopted your specialty, when worthily practiced, as a part of herself. Theology looks upon you with respect, as of the same general guild. Law has extended to you immunities, and secured for you reverence in your professional relations. The world takes you into its confidence, and places in your hands important interests. Men send to you their wives and their children, for professional advice and assistance. You have no right to take upon yourselves these momentous duties without the proper qualifications. You are bound in all honor to keep abreast the advance of professional knowledge, that you may be prepared always to render the best service possible. Above all things, you will be despicable beyond conception, should you take advantage of professional relations and confidential associations to compass any shameful or selfish ends. Your patients must of necessity trust you implicitly, for they visit you because you possess knowledge of which they are destitute. You are unworthy a place in the ranks of a profession if you betray that confidence by failing to give in every case your very best services. In all your professional relations, I charge you to be true to yourselves, your profession, and your Alma Mater, which will ever watch your future course with anxiety and solicitude.

GUM LANCING IN DIFFICULT PRIMARY DENTITION.

BY DR. E. C. KIRK, D. D. S.

An address before the Woman's Dental Association of the United States.

I should feel myself constrained to offer you an apology for bringing to your notice such an antiquated topic, were it not that old as it is, the vexed question of its legitimacy is still in dispute, and the procedure has not gained general acceptance among medical and dental practitioners. It is not my purpose to enter into any historical résumé of the views entertained by various writers of greater or less prominence, who have recorded their opinions from the times of Hippocrates and Galen to the present time; but in this paper to call your attention to the main differences in the two principal schools of thought on this subject, and urge upon you the necessity of investigating it for yourselves, not from the point of view of the medical practitioner, but from the background of the special training and culture which you possess as dentists. I think we may safely dismiss from consideration the views and theories of earlier medical writers upon this subject, and confine ourselves wholly to an investigation of the more recent, for in a certain and more or less definite degree the former are included in the latter—at least so much of the former as has been considered valuable. The question of gum lancing in difficult primary dentition has been the subject of much animated discussion during the past eighteen months. Especially since the publication of a book by Dr. Forchheimer, of Cincinnati, Ohio, on "Disease of the Mouth in Children" (non-surgical), in May, 1892, in which work the author took most positive ground against the operation as a therapeutic measure for the relief of diseases incident to the teething period. His conclusions respecting the operation were tersely stated as follows:

1. It is useless—(*a*) as far as giving relief to symptoms; (*b*) as far as facilitating or hastening teething.
2. It is useful only as blood-letting, and ought not to be used as such.
3. It is harmful—(*a*) in producing local trouble; (*b*) in producing general disturbances on account of hemorrhage; (*c*) in having established a method which is too general to do specific good, and too specific for general use.
4. It is to be used only as a surgical procedure to give relief to surgical accidents.

I have quoted these conclusions at length, because they fairly represent the opinions, and are the arguments generally put forward by that class of medical practitioners who do not know anything about the operation from practical experience, and still less from an intelligent understanding of the rationale of the procedure.

A critical review of Forchheimer's book appeared in the *Dental Cosmos* for June, '92, pointing out some of the fallacies that were apparent in his conclusions, and advocating the operation of gum lancing on rational grounds from the standpoint of accepted knowledge of the anatomy, physiology, and nervous relationships of the tissues and organs involved. The subject was further discussed by numerous authors and editors in medical and dental periodicals, and finally Dr. Magitot presented it in a communication to the French Academy of Medicine. In his paper the author took the ground that inasmuch as dentition was a purely physiological process, there could be no such things as "accidents of dentition," or, as we express it in this country, diseases incident to or dependent upon dentition. His argument to sustain his position was, like that of Forchheimer, based solely upon analytical reasoning from premises which could not be accepted by any one conversant with the clinical aspects of the subject.

As a sequel to this discussion of the French Academy, M. Poinsot, one of the participants, has elaborated the subject in an interesting volume recently published, entitled, "Accidents of the First Dentition."

It will be seen, then, that the class of practitioners who are antagonistic to the operation of gum lancing are those who, like Forchheimer, object to it because they do not understand why it should be done, nor how to do it—mistaking gum scarification for gum lancing,—and those who, like Magitot, oppose the operation as a therapeutic measure because dentition is a physiological process; *ergo*, there can be no diseases due to or caused by it; hence lancing the gums for the relief of any disorders intercurrent with dentition is irrational and unnecessary. During the past twenty years it has been my lot to have been somewhat closely related to medical as well as dental work, and to have had rather frequent opportunities to observe cases of difficult dentition, and the effect of an intelligent use of the gum lancet as a therapeutic measure for the relief of disorders incident thereto; hence my faith in the efficacy of the operation is the outgrowth of personal experience as well as observation, and if I shall seem to advocate it somewhat dogmatically, it is because I am convinced that the facts sustain my belief.

The argument of Magitot and his followers, it seems to me, is easily demolished after an investigation of his major premise, viz.: that dentition is a purely physiological process. The answer to this is simply that dentition, while it is generally a physiological process, is not always so, and like all physiological processes, if interrupted or interfered with, may become pathological in its expression. We have only to call to mind the many accidents and fatal pathological phenomena which may attend parturition to find sufficient proof of the utter fallacy of Magitot's proposition.

The proruption of a tooth is a complex process, and includes a number of factors which, when they proceed harmoniously, produce no untoward results, and the teething process in its physiological expression is unattended with disturbances to the health status of the infant. A perfectly normal process of dentition rarely occurs. There is generally a condition of nervous excitation attendant upon the teething period, which in many cases is so slight as to express itself only as a somewhat increased nervous irritability in the child, productive of wakefulness, etc. Or the nervous irritation may be so increased in degree as to cause the most alarming and even fatal consequences. The period of teething is generally made manifest by this increased nervous irritability, and an increased flow of saliva from the mouth. The gums may be more or less congested over the presenting teeth, the positions of which are usually clearly discernible by reason of the gum being elevated and made tense by the erupting tooth crown beneath. The tumefaction or congestion of the overlying gum may be entirely absent, even in cases where the most profound nervous manifestations are present, due wholly to the peripheral nervous irritation caused by the advancing tooth. It is this class of cases where the local manifestations are but slight, and the general disturbance is profound, that has been the cause of the controversy which has been waged around the question of gum lancing. Those who hold to the belief of Forchheimer deny that any relief of general systemic disturbances can follow the operation in such cases. Where they have to deal with a case presenting a congested condition of the gum tissues, they admit that the operation may be useful by letting blood, but no further. The explanation of this belief is not far to seek—it is due to the fact that they understand the operation of gum lancing to mean a superficial scarification of the gum tissue, to empty the congested vessels of the parts and so reduce the local hyperæmia.

I have taken some pains to investigate the matter when opportunity has offered, and I have never found an operator who objected to gum lancing who did not have exactly this conception of the operation. This is gum scarification, and not gum lancing. Gum lancing is a totally different procedure, undertaken not for the relief of congestion of the gum, but for the purpose of freeing the tooth from restraint by the unyielding gum which covers it, causing backward pressure of the undeveloped tooth root upon the formative dentinal papilla at its base; the irritation of this latter is the cause of the nervous disturbances which it is the purpose of the operation to relieve. The conditions which demand relief by gum lancing are so graphically told by the late Dr. J. W. White, in the *American System of Dentistry*, that I cannot do better than quote from him:

"The direct pressure of the advancing tooth upon the fibrous integuments is not the only nor the principal factor in disturbance of equilibrium in pathological dentition. The most serious complications are, it is reasonable to suppose, caused by the resistance of the gums, and consequent pressure upon the nervous and vascular supply of the pulp, giving rise to severe and unremitting pain—a true toothache, comparable only to that exquisite torture which is experienced in after life from an exposed and irritated pulp. The condition, when a tooth is thus situated, is not unlike that which is found in whitlow, vascular and sensitive tissues bound down by unyielding coverings. If such a perversion of this physiological process is possible, there can be no question as to the extent of the mischief which may result—an irritability of the general system which finds expression in loss of appetite, sleeplessness, nausea, thirst, fever, diarrhœa or constipation, convulsions, paralysis, and other serious lesions, many of which, as strabismus or epilepsy, remain throughout life."

If, then, morbid symptoms coincident with the teething period manifest themselves, and their history and character point to a dental origin, the operation of dividing the gum over the presenting tooth should be so performed that the crown shall be completely freed from its imprisonment by the overlying tissues. It is frequently necessary to include in the operation not only the teeth immediately presenting, but those next in order of eruption in each jaw. If the operation has been properly done, it should be followed almost immediately by marked improvement in the general condition of the infant, and instant relief to the nervous distress.

The technique of the operation is quite simple. The child should be placed on a pillow lengthwise, supported on the lap of the nurse or assistant, seated on a chair facing the operator, and with the back toward the source of light, which should come preferably from a north window. The operator seats himself in front of the nurse, with the end of the pillow supporting the child's head in his lap. He then has command of the territory of operation, and can, by holding the child's head, guard against any sudden movement. The hands and body of the child are to be firmly held by the assistant. The best form of lancet for the operation is a small curved bistury, such as is sold at the depots for the purpose, but with the needle-like point ground off to a small but keen, rounded edge. The lancet is to be passed through the overlying tissue until it is felt to come into contact with the enamel surface, and the tissue divided a sufficient distance to allow the tooth to erupt without resistance.

For the incisors a single linear cut along the incisive edge is sufficient; for the cuspids and molars, a crucial incision is required. The operation is not excessively painful, and the pain is reduced to a minimum when a properly sharpened knife is used dextrously. Little hemorrhage follows, but if persistent, some slight styptic, such as powered alum or phènol sodique may be used.

Nearly all medical writers agree that the teething period is one fraught with danger. Statistics show that the percentage of infant mortality is markedly higher during teething. A long series of infantile disorders occur most frequently during that period, and while recognizing this coincidence we find many otherwise intelligent practitioners ignoring the possibility of a casual relationship between these diseases of infancy and the teething process, and, consequently, condemning the operation of gum lancing, not only as useless, but dangerous.

A recent published work on "Diseases and Injuries of the Teeth," by Messrs. Morton Smale and J. E. Colyer, of London, contains the following suggestive statement: "Many healthy children pass through this period without any untoward symptoms, but many succumb, as may be gathered from the tables of mortality, teething being the cause of over 4.8 per cent. of deaths in children under 12 months, and 7.8 per cent. between the ages of 1 and 3 years." These same authors, however, notwithstanding this statement, are inclined to regard gum lancing as not useful save as a blood-letting measure. I have been unable so far to find any reported case of fatal result from gum lancing, nor have I knowledge of any untoward result occasioned by it when correctly performed. It is quite true that no precise scientific demonstration by the microscope or by post-mortem examination has been made to settle the question of the exact rationale of the procedure pro or con. The conditions are such that it perhaps never can be made, but this same objection might be as potently urged against many other well-established therapeutic measures in constant legitimate use.

The value of gum lancing in difficult dentition is established almost solely on clinical evidence, though it is difficult to understand why the perfectly plausible hypothesis of the rationale of its action should be rejected by its opponents as imperfect, when that set up by them in rebuttal is so manifestly illogical and inconsistent. Clinical evidence depends for its value upon the character and relationships of the phenomena observed, and the frequency with which certain related phenomena repeat themselves under similar conditions. If, for instance, infantile convulsions occurring coincidently with difficult or delayed eruption of the teeth are found to be relieved by a judicious use of the gum lancet, and a favorable result is obtained invariably in a number of cases so treated, we should be justified in assuming the casual relation between difficult dentition and infantile convulsions within certain limits, and be justified in the use of the lancet as a therapeutic measure for their relief. This relationship has been repeatedly observed. I have in several instances seen teething children, where convulsive seizures had supervened until the child was almost comatose, relieved at once and veritably snatched from the jaws of death by freely dividing the gum over the retarded teeth.

But convulsive seizures are not the only pathological result of delayed dentition. The irritation caused by the advancing tooth is but slight at first, and extends over a considerable period of time. The impress upon the nervous system of the child may be comparatively slight, so that its expression may not be manifested in the explosive outbursts of the nervous system which we know as convulsions. The nervous stress is more commonly manifested in loss of appetite, impairment of the digestive function, and nausea. Impairment of the digestive function, due to interference with the innervation of the stomach, whereby the food ingested becomes itself a source of irritation through the establishment of fermentative processes throughout its mass, leads to and is accountable for the train of intestinal disorders, infantile diarrhœas, intestinal catarrhs, etc., which so often accompany the teething process, and constitute the *bete noir* of mothers in rearing their children through the much dreaded second summer. Where the digestive sequelæ of pathological dentition have established themselves, the lancet cannot be expected to effect a cure unaided. Its use should be followed by appropriate constitutional treatment.

The close relationship of difficult dentition and capillary bronchitis in infants has frequently been noted by medical writers and practitioners, but the idea of pathological dentition as a predisposing, not to say exciting, cause seems to have been overlooked until recently, notwithstanding the fact that in very many of the fatal cases of crupous pneumonia in young children there has been a definite history of difficult dentition immediately antecedent to the pulmonary attack. Recent observations lead me to suspect that in these cases the antecedent condition of difficult or pathological dentition has been the cause which induced the subsequent attack of capillary bronchitis.

In this connection it may be well to call to your attention the investigations recently published by Dr. Emil Schreier, of Vienna, with respect to the nature of the infecting organism in apical pericementitis. This observer found in all the cases of apical inflammation about the roots of teeth which he examined, twenty or more in all, the diplococcus pneumoniæ, invariably present as the exciter of the inflammatory process. This is in line with Miller's investigations, which showed that the diplococcus pneumoniæ was a constant inhabitant of the mouth. As a further link in this particular chain of evidence, Dr. C. N. Peirce recently recounted to me two cases of incipient croupous pneumonia which occurred at different times in a family who were patients of his. In each instance the child was suffering from difficult eruption of the teeth, and in each case croupous pneumonia was set up as a sequel. In both cases Dr. Peirce performed gum lancing, and in both cases there was subsidence of all the distressing symptoms in a few hours, with rapid and complete recovery. To any one who has investigated this subject, especially from the clinical standpoint, there can be no doubt as to the great utility of the operation in relieving in many cases the most alarming symptoms. It is simply and easily performed, and there are no weighty objections which can be urged against it, so that it is a matter of continued wonder that there can be found in the ranks of medical practitioners those who still strongly oppose it.

It may be asked of what interest can the question be to the dentist, who is seldom, if ever, called upon to operate in these cases. To this I would answer, prepare yourselves by an intelligent understanding of the operation, and its correct relationships, and you will be consulted with respect to these matters when it is known that you are competent to give judgment upon them. Or if the knowledge has no usefulness outside of your immediate family, it may still afford you the opportunity to save the life of some one dear to you, as I verily believe it has upon more than one occasion in my own family circle.

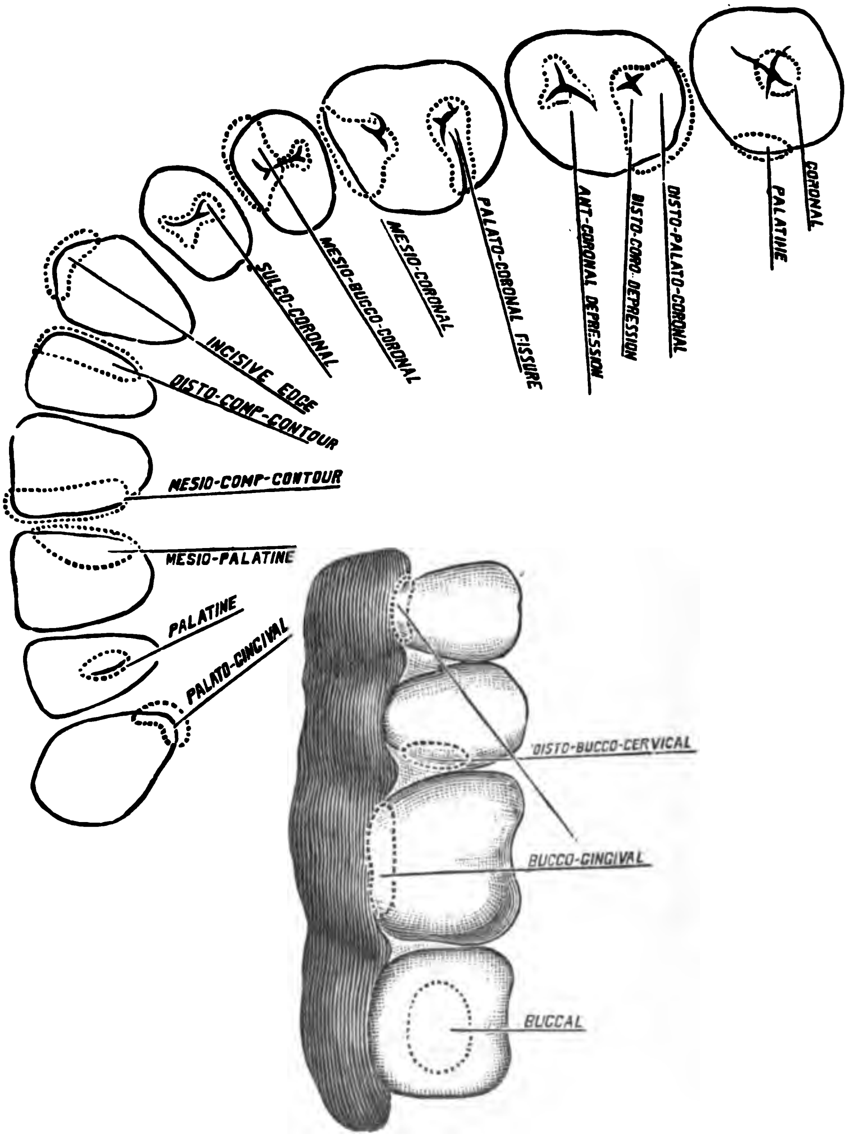
CAVITY AND FILLING NOMENCLATURE.

BY F. E. HOWARD, D. D. S., M. D. S.

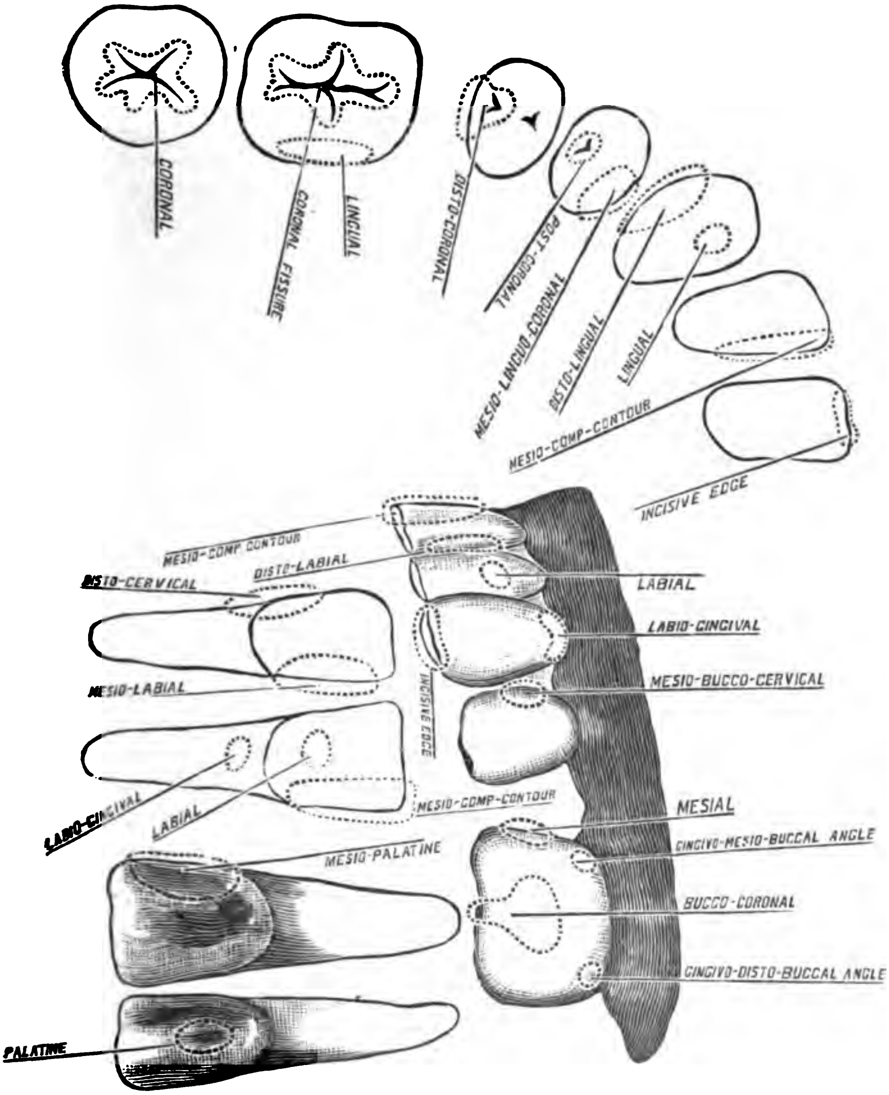
Read before the Eighth District Dental Society, at its Twenty-Sixth Annual Meeting, Buffalo, N. Y., April 24, 1894.

We have all felt the necessity, and realized the importance, of having some system whereby cavities and fillings in teeth may be named and definitely located in the mind, when we are describing operations upon the teeth. One of the prime requisites of such a system is, that it shall be simple and self-explanatory. None has so far been generally adopted. I shall, on this occasion, attempt to present something in this line of work that is simple and comprehensive. But few of the terms that I shall use are new, as I have adopted those that are at present universally understood. By compounding these, I shall endeavor to present to you a system of cavity and filling nomenclature that will give names for any cavities that may be likely to form through decay, or to be produced by accident or mechanical means. To illustrate what I propose in this direction, let us take the five principal surfaces of the teeth, and name their cavities after them, compounding the terms as the territory enlarges or encroaches upon other divisions.

All proximate surfaces are designated as mesial and distal. The cutting surfaces of the six anterior teeth (superior and inferior) I have designated



SUPERIOR TEETH.—PALATINE, BUCCAL AND CORONAL SURFACES.



INFERIOR TEETH.—Lingual, Buccal and Coronal Surfaces.

SUPERIOR INCISORS.—Labial and Palatine Surfaces.

as incisive edges. The inner surfaces upon the superior teeth I have called palatal, or palatine; the same surfaces upon the under teeth I have termed lingual. The surfaces sometimes called masticating, grinding, or articulating, I have designated as coronal, for the reason that I believe that term to be technically as accurate, generally as well understood, while it is more easily compounded with others. The word cervical, I have confined to the proximate surfaces of the teeth, while gingival is applied to their outer and inner aspects.

To illustrate this system, we will take the buccal surfaces of the molars. A cavity located fairly in the center of this surface is named a buccal cavity. If it is located at the margin of the gum, we will call it a bucco-gingival cavity, for the reason that it is located at the gingival margin upon the buccal surface. The same restriction of terms is employed in naming the bicuspids. If a cavity be located at the distal angle at the gum line of an inferior molar, it will be a gingival disto-buccal-angle cavity. If located at the mesial angle, it will be a gingival mesio-buccal-angle cavity, and this method of compounding will be quite as applicable to the lingual surfaces. If we have a buccal cavity upon a lower molar, and the fissure extends to the coronal surface, it will be termed a bucco-coronal cavity.

It sometimes occurs that when a mesio- or disto-coronal filling in a bicuspid has been inserted for some years, decay occurs at the cervical border of the filling. If it is desirable to make a repair in this case, by cutting through the buccal aspect until the cervical border is reached; we will then have a disto-bucco-cervical cavity. The same terminology may be applied to the mesial surface, and the cavity will be a mesio-bucco-cervical cavity. If the surface of secondary decay can be reached from the palatal portion of the tooth, without extending through to the buccal, it will then be a mesio- or disto-palato-cervical cavity. It occasionally occurs that by the loss of a bicuspid or molar, a cavity is presented adjacent, on the mesial surface, and at the gum line. This will be a mesio-cervical cavity. If posterially, it will be a disto-cervical cavity.

Cavities located upon the labial surfaces of the superior or inferior teeth are named according to their location upon the surfaces. A cavity situated upon the main labial portion of a central or lateral incisor will be a labial cavity. If located at the margin of the gum, it will be labio-gingival. If the cavity should occur upon the disto-proximate surface, we would then call it the disto-cervical or mesio-cervical cavity of the central or lateral incisor, or the cuspid of either side.

Upon the palatal surfaces of the upper teeth, we are likely to find cavities at two points. If in the central depressions of the incisors, they will be palatine cavities; if located at the gum line, they will be palato-gingival; if upon the lingual surface of the inferior cuspid, where decay occasionally occurs, it will be called a lingual cavity of the inferior cuspid; if upon the edges of any of the six anterior teeth, they will be incisive-edge cavities.

Let us now consider the surfaces of the bicuspids and molars, returning to the anterior teeth later on. If the sulcus in a bicuspid requires to be traced out, it will be a sulco-coronal cavity. If the anterior pit in the first superior molar requires to be filled, it will be an antero-coronal-depression cavity. If the posterior pit requires the same attention, it will be a post-coronal-depression cavity. If the central pit in the wisdom tooth, either upper or lower, is decayed, it will be simply a central-depression-coronal cavity. If it occurs at the palatal pit of the first superior molar, the fissure extending into the post-coronal depression, and if this requires to be traced out and filled, it will be a palato-coronal-fissure cavity. If the anterior and posterior pits are joined, it will then be an antero- and post-coronal-depression cavity of the first or second molar.

If we have a cavity located upon the mesial surface of the second superior bicuspid, the first having been extracted, it takes the name mesial cavity, and this rule will be applicable to any of the distal surfaces.

If we have a cavity located upon the mesial surface of the second superior bicuspid, that requires to be extended into the sulcus, it will then be a mesio-coronal cavity. If the distal surface is affected in the same manner, and the same procedure be adopted, it will be a disto-coronal cavity of the first superior bicuspid. The same terms will be applied to all the surfaces of the bicuspids and molars. If the cavities just spoken of should involve more territory in the direction of the buccal surface of the tooth, it will then be a mesio-bucco-coronal cavity. Should it include still more territory upon the palatal side, it will then be a mesio-bucco-palato-coronal cavity. If the same surfaces are affected upon the distal aspect of the tooth, it will be a disto-bucco-palato-coronal cavity, and this rule is applicable to all the bicuspids and molars.

If the mesial and distal surfaces are decayed, and the whole palatal wall is lost, it will then be a mesio-disto-palato-coronal cavity. If the other plate is gone, the palatal remaining, it will then be mesio-disto-bucco-coronal, and if this surface is built up to contour, it will be a mesio-disto-palato-coronal contour filling. If extensive decay has occasioned the breaking down of the distal portion of the first superior molars, extending into the palatal fissure, we will have a disto-palato-coronal cavity. If in the first or second inferior molars we have a central depression, with fissures radiating in four directions, and these are traced out and united, we have a coronal-fissure cavity. Sometimes we have in these teeth a cavity situated upon the lingual surface, and occasionally one at the margin of the gum. These will be lingual, or linguo-gingival cavities.

The inferior bicuspids, being slightly different in contour from the superior ones, we have, upon the coronal surfaces two depressions, or pits, which are usually filled individually. These will be antero- or post-coronal-depression cavities of the inferior bicuspids.

Let us now return to the six anterior teeth. Beginning with the right superior central incisor, we may have a cavity situated upon the mesial surface. If it does not encroach upon the labial or palatine portion, it will be simply a mesial cavity. If, to make it accessible for filling, it is cut out upon the palatine portion, this will be a mesio-palatine cavity, and it may contain a contour or a concave filling. If the reverse of this occurs, and the mesial cavity is opened up from the labial aspect, it will then be a mesio-labial cavity, and the same rule will apply to the distal surfaces. If it be that an extensive cavity is located upon the mesial surface of the left superior central incisor, involving the mesial, palatine, and labial surfaces, and the incisive edge, requiring the building up of the whole of this portion of the tooth, it will be designated as a mesio-compound contour filling. If it occurs upon the opposite side of the tooth, it will be a disto-compound contour filling.

Concerning the six anterior and inferior teeth, and the proximate cavities occurring in the cuspids, if they are approached upon the lingual surface, they will be either disto- or mesio-lingual cavities. If they are largely opened up from the labial surface, they will then become mesio- or disto-labial cavities, and the same nomenclature will apply to the incisors, making them simple or compound cavities.

The key to this system of nomenclature is, that the various cavities in teeth and the fillings which may be therein inserted take their names from the surfaces in which they are found, and that no new terms are introduced, but that those already familiar to practitioners are used. Hence there is no necessity for learning a new nomenclature and becoming familiar with terms that are strange. The terminology is that which will naturally suggest itself to the dentist, and by its use there is hope that something like unanimity may be secured when speaking or writing of cavities and fillings in teeth.

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THE PATH OF FAME.

Response to a Toast at the Annual Banquet of the Alumni Association of the Chicago College of Dental Surgery.

The Path of Fame, which leads to the Temple of Honor! Ah, who does not long to tread its alluring, if thorny track? It climbs to dizzy heights, and winds past awful precipices. There are craggy obstacles in the way, and the course too often is slippery and slimy; but these are insufficient to deter the ambitious. There are many of these paths, but all are alike in the difficulties which they present.

There is the way of Military Renown, which leads through fields of blood and is studded with swords and pikes and guns. There is that of of Literary Excellence, besieged by the bloodhounds of envy and all uncharitableness, and which leads through seas of midnight oil and oceans of wasted ink. There is the road of Mercantile and Business Success, which is so blocked by the wrecks of fortune and strewn with fragments of blasted hopes as to be well nigh impassable. There is the Passage of Art, so dark, so narrow, so cold, so desolate, that the sunshine of favor too often comes only to shine upon the grave of him who in poverty and toil has painfully threaded its upward course.

And there is the Professional Road; so broad and enticing at its entrance, so narrow and stifling at its end; so thronged at the outset with aspirants who early fall by the way, so lonely and untenanted at its extremity, save by the shadows and ghosts of the zealous throng which entered at its gates. Ah, these are perilous passages, and he who threads their dark mazes will find himself accompanied upon the right hand and the left by pain, and toil, and weariness, too often tormented by hunger, and thirst, and loneliness, the goal, like the mirage of the desert, constantly shifting its position and cheating with hope deferred, until despair has seized the weary pilgrim, and he curses the day in which he set out on his perilous quest. And yet, what young professional man, who is worthy the name, does not desire to test the dangers and difficulties which he knows will beset him?

There are three great incentives which prompt the young graduate to labor and study. The first, the noblest, the highest, is a love for scientific investigation; an earnest desire to acquire information; an overpowering thirst for knowledge; a craving for intelligence and light. When a young man is impelled by this feeling, there are no heights that he will not scale. The obstacles that he encounters become spurs to yet greater efforts. His highest pleasure is obtained in a gratification of this insatiable thirst for knowledge. The ordinary pursuits of men seem trivial to him, and the results of their toil unsatisfying. The enjoyment which his books, his studies, his investigations bring to him, far exceeds that which the mere gratification of bodily appetites can give. Such a man enjoys more than he who spends his time in pandering to his selfish appetites, because his gratification is intellectual, and therefore purer and more lasting.

The satisfaction of a man who indulges a mere bodily appetite, or who gratifies a gross sense, ends with the moment; but he who has mastered something new in science, who has obtained another thought, has laid up for himself pleasures that will return again and again, each time with added zest, and which will propagate other delights and assist in bringing new joys. Hence the pleasures are constantly increasing, and the capacity for enjoyment ever growing. There is no satiety, no cloying of the appetite, no dulling of the sensibilities.

The second great incentive is the love of approbation; a desire for the good opinion of others; the ambition to receive the plaudits of men; in other words, the thirst for fame. When this is legitimate, and the object is really to deserve to be well spoken of, there is nothing more ennobling. But the mere craving for applause, the hungering to occupy places of honor because of the power which they will confer, or the homage which they may exact, or the acclamation which may be won through them, is the most despicable of ambitions. Some of the greatest crimes against humanity have been committed, that aspirations for place and power and plaudits might be gratified. The desire to be respected, and to receive the proofs that he possesses the confidence and affection and goodwill of his fellows, is a most worthy ambition, and hence when positions of honor and power are spontaneously offered, the recipient has a right to be gratified. But when they are the results of falsehood and duplicity, of bargaining and self-seeking, they become but badges of dishonor, and really disgrace him who bears them. We have seen men debase themselves by a thousand little petty meannesses, by deceit and fraud and imposture, that they might compass some office in a professional society or meeting, selling out their manhood for the mere semblance of honor, and to obtain the affirmative voices of men who can but despise them in their hearts. When this is the incitement to professional or other ambition, the path that leads to an enduring fame has been widely missed.

There is yet another stimulus to exertion, and that is the desire to acquire wealth. So long as this is held in subjection to other ends, the ambition is a worthy one. But when a professional or other man makes this his first object in life, and is actuated only by selfish and sordid considerations, he becomes an object of contempt. A professional man, if he is worthy his calling, seeks to benefit his fellows by the exercise of his vocation. He realizes that his gifts and knowledge have not been conferred upon him for his sole benefit. While he is entitled to a just remuneration for his services and time, he also owes to mankind a professional debt, and the poor and needy are entitled to a share of his attention, regardless of fees. The path to honor and fame has ever been closed to those who shut their hearts against their fellow men. The door is opened only to such as will employ their knowledge and power in the service of others.

Especially is this true in all departments of medicine. When upon a man is bestowed the gift to heal the sick and bring relief from pain, a great weight of obligation rests upon him to use it for the good of all. The Great Physician, who went about doing good, sternly rebuked the sordid wretch who for money sought to obtain this power, that he might use it for his own selfish purposes, and every practitioner in any branch of medicine should heed the lesson, remembering that honor comes not to him who most assiduously seeks it, but visits those who

> "Do good by stealth and blush to find it Fame;"

knocks at the door of the man who honestly does his duty, actuated by high and noble purposes, cheered and sustained by the consciousness that he has at least earned the goodwill of his fellows.

> " Honor and shame from no condition rise;
> Act well your part; there all the honor lies."

THE DIFFUSION OF PROFESSIONAL INFORMATION THROUGH THE NEWSPAPERS.

BY ONE WHO DOES NOT BELIEVE IN IT.

We frequently meet with articles in the journals, and listen to callow papers in societies, in which it is recommended that reputable dentists should furnish, under their own names or otherwise, to the newspapers of the day, articles giving correct information upon professional matters, that the minds of the people may be disabused of the many false ideas inculcated by advertising quacks. If the ends sought—and which certainly are greatly to be desired—could be secured by the means proposed, I should most heartily commend the scheme. But of this I am exceedingly doubtful. I fear that greater harm than good might ensue. The press is certainly a powerful educator when it is intelligently and honestly directed. A quarter-century ago newspaper management was a different thing from that of to-day. It then required a man of literary ability and broad culture to make a great editor. The code of newspaper ethics was a strict one, and every editor was held to a severe moral accountability. Journals were conducted from the standpoint of the reader, and there was some attempt to verify the statements made and the news given.

At the present time, the typical daily journal is edited in the counting-house, instead of the sanctum. It is merely a machine for the coining of money. Its literary character is entirely subordinated to its business interests. Its old and once well-won reputation as an educator of the masses has been deliberately sacrificed upon the altar of cupidity, and our secular journals are managed like any other business enterprise—from a purely selfish standpoint. Editors like Bryant, and Raymond, and Greeley, have now no place in newspaperdom, but are succeeded by

Pulitzers and Bennetts, able financiers and business men, who have converted the newspaper sanctum into a broker's office. The money gained enables the nominal editor or proprietor to hire men with plenty of literary ability, and to direct the product of their brains into a channel that shall bring yet more money.

Reporters now are usually smart young men who work like other journeymen, by the piece, and whose pay is dependent upon the acceptance of their contributions. The editor wants something that is striking and readable. Sensational articles, that will go the rounds of the press, and thus spread the fame for smartness that the journal covets, are most sought. An epigrammatic lie is infinitely preferred to a prosy truth. If a reporter can take an actual fact as a basis upon which to weave a tissue of absurd but brilliant caricatures, he will never want for a position.

I am not railing against the press. We all fear, if we do not respect it, and I am but stating a simple condition. The present status of newspaper editing is entirely consistent with the present ethical standpoint. Managers of journals insist that they are under no more obligation to sacrifice their pecuniary interests to the public good, than is the proprietor of a manufactory or a corner grocery. And they are right, too, from the present ethical point of view.

Look at the average report of our own professional meetings, as made by the newspaper reporter. They are too often but mere travesties. The smart young chap cannot resist the impulse, either openly to burlesque the proceedings or covertly to ridicule them, that he may spice his article and make it readable to the non-professional. Sometimes this seasoning is a mere flavor of ginger to which we do not seriously object, but too often it is the capsicum which burns. In either case it is added to make the article readable, and to commend it to the public taste. The reporter, the editor and the publisher, are but catering to what they believe to be that which is relished most by the average reader, but the result of which is to hold up to public derision a young profession which is striving to win public favor.

To my apprehension, the man who proposes to educate the masses through the newspapers would commence at the wrong end of the business. The public must be educated up to a perception of the truth, and to a demand for that which is not a mere parody. This is not to be done by prosy, educational articles, written by men who know all of dentistry but little of newspaper work. The average reader does not spend his time over paragraphs that have for their avowed object the stuffing of him with information. He reads for diversion, and not for investigation. You cannot get him to swallow a pill if it be not sugar-coated with some special attraction. The person we wish to reach does not read the scientific and professional journals, which alone can be depended upon to give the exact truth. Neither are the newspapers anxious to publish such matter, or, publishing it, they are certain to send out with it something that will completely neutralize its force.

I challenge the truth of the statement often made that medical societies recognize the educational power of the press, and are taking advantage of it. They have tried that business to their sorrow. Under the guise of professional information, the wily quack has ever been ready to furnish the press with any amount of information, all tending very delicately but unmistakably toward his own aggrandizement. Those who are members of medical societies know that the great aim of all reputable organizations of a professional character, is to keep their members and the societies out of the public press. They condemn in unmistakable terms the educational business through the newspaper, as tending solely toward the benefit of the irregular and unworthy.

The scrutiny of a committee will not relieve the matter of its objectionable features. Some name must be appended to a contribution, or it must have some other substantial authority to attest its genuineness, and this at once taints the whole affair with the odor of advertising. If a communication which contains correct information be sent to the papers anonymously, how is it to be distinguished from the misinformation now furnished? If its legitimacy be acknowledged by a reputable name, the whole question of advertising is admitted, and the quack will immediately rush into print with columns of false intelligence a great deal more entertaining, each with a covert advertisement in the tail of it, and he will justify himself by the precedent established already.

If the name of a committee, or that of a society be used, they are simply entering into competition with the charlatan in a business at which he is an adept, and they put themselves and their profession on his level in the public estimation at once. The average reader does not know who is professional authority, and who is professional anathema. So the name of some advertising Reginald DeCourcy, formerly Dentist Extraordinary to the King of the Cannibal Islands, carries much more weight to his mind than that of the worthiest professional man in existence, while the former is a thousand times more likely to get into the newspapers with his smoothly worded personal puffs.

In view of these facts, I cannot but believe that the only dignified, professional, manly way, is to continue within professional lines, keep out of the newspapers, and leave the advertising business to those who know more about it than we do; to diffuse information that is legitimate, whenever we have the opportunity to do so in a place in which we know that it will be respected, and thus in time surely to build up a reputation that cannot be successfully attacked, and which will secure the respect, even of that smart Alick, the modern newspaper reporter.

THE DENTAL PRACTITIONER

AND ADVERTISER.

DR. W. C. BARRETT, ... EDITOR.

BUFFALO, N. Y., JULY, 1894.

A FATAL CASE IN PRACTICE, BUT NOT OF COCAINE POISONING.

On March 28th, ult., Mr. Thomas H. Dailey, a prominent citizen of Goshen, Indiana, died in the office of Dr. B. P. McDonald, a well known and highly respected dental practitioner of that place, after the hypodermic administration of not above ten minims of a preparation of cocaine, made from the formula published in this journal in its January, 1894, number. It was at once reported that the patient died of cocaine poisoning. The case is an interesting one, and the publication of the whole particulars may be very instructive to others. We therefore devote to it more space than under other circumstances it might claim.

The fact of the death, with the amount of cocaine administered and the principal symptoms exhibited by the patient, were at once communicated to the editor of this journal, and he immediately returned answer that it was impossible that the fatal results were those of cocaine poisoning. The symptoms did not indicate this, and he expressed the conviction that there would be found, on a careful post-mortem examination, either decided heart lesions, or cerebral embolism, or both.

The facts brought out at the coroner's inquest, which was subsequently held, were as follows: Dr. B. P. McDonald testified that on March 28th he administered to the deceased, with great reluctance, and only upon urgent solicitation, not more than ten minims of the cocaine preparation. He extracted two or three teeth, when he noticed that the pulse became more rapid and uncertain, the patient complained of dizziness, there was a fluttering of the heart, flushing, cyanosis, labored breathing, unconsciousness, cessation of the heart's action, pallor, and death. The time that intervened between the first unfavorable symptoms and final death was not to exceed ten minutes, and was probably less than that.

Dr. C. C. Sparklin testified that he had been the medical adviser and attendant of Mr. Dailey for twenty-five years, during which the deceased had been subject to frequent attacks of inflammatory rheumatism. In the last five or six years, a decided rheumatic condition of the heart had manifested itself, producing hypertrophy, with valvular lesions. This was sufficient at times seriously to interfere with his business. He was called to the office of Dr. McDonald on March 28th, and found Mr. Dailey dead, upon the sofa. Artificial respiration was attempted, and hypodermic injections of whiskey and ammonia were made, neither of which was absorbed, nor were any signs of life manifested. The man was beyond question dead. From his knowledge of the patient, and the account he had of his death, he had no hesitancy in saying that Mr. Dailey died from heart failure, due to his diseased condition.

Dr. J. A. Irwin testified that he was at one time President of the Board of United States Pension Examiners for Elkhart County, and during that time examined Mr. Thomas H. Dailey, deceased, and found him suffering from chronic diarrhœa and rheumatism. It was the unanimous opinion of the Board that Mr. Dailey was suffering from heart disease. He had formerly been in the service of the United States during the war of the Rebellion, and a pension was granted him, the rating being given, in part at least, because of abnormal condition of the heart, due to diseases contracted while in the government service.

The coroner, Dr. William W. Johnson, in his verdict, said that he had been able to establish to his entire satisfaction, from the regular medical attendant, a clear clinical record of heart disease of several years' standing. The symptoms and general indications pointed so unmistakably to heart failure, that he did not deem it necessary to hold an autopsy. He therefore found that the deceased came to his death from heart failure, and that Dr. McDonald was in no way censurable.

One of the most satisfactory incidents connected with this unfortunate case, is the conduct of the dentists and physicians of Goshen and vicinity. We have never known an instance in which a truer professional and ethical sympathy was exhibited, and it may stand as a rule of conduct for the two professions under all like circumstances. It was creditable alike to Dr. McDonald, his brother dentists and the physicians, and we shall always entertain a higher opinion of all, because of the true professional spirit manifested. Goshen, a town of 7,000 inhabitants, is only ten miles from Elkhart, which contains about 15,000. The dentists of the latter place held a meeting and unanimously adopted the following preamble and resolutions:

WHEREAS, The late dispensation of an all-wise Providence in the office of Dr. McDonald has caused a shadow of gloom over us as fellow-laborers in a noble profession; and

WHEREAS, We are aware of Dr. McDonald's professional worth and ability, and of his standing in the world of men; therefore, be it

Resolved, That we, the undersigned members of the Elkhart Dental Society, in meeting assembled, while tendering our sincerest sympathy to him, fully exonerate him from all blame.

Signed,

W. M. GEORGE.
S. B. SHORT.
J. F. WERNER.

S. M. CUMMINS, *President.*
G. B. CHESTER, *Secretary.*

The Dentists of Goshen also published a card of sympathy, and expressed their opinion that their "senior dentist," Dr. McDonald, was fully warranted in the course that he took, and that no blame could be imputed to him. This card was signed by J. H. Hughes, D. D. S., E. P. Cunningham, D. D. S., and W. O. Vallette, M. D., D. D. S., and it is a certificate of honor to them as well as to Dr. McDonald.

Resolutions of sympathy and confidence were also passed by the Isaac Knapp Dental Coterie, of Fort Wayne, Ind., of which place Dr. McDonald was formerly a resident, and were signed by E. F. Sites, Pres., M. A. Mason, Secy., W. F. Shryock, Geo. E. Johnson, W. W. Munger, H. C. Sites, S. B. Brown, J. T. McCurdy. All of these evidences of confidence and esteem, expressed without solicitation, must be most gratifying to Dr. McDonald, who has for twenty-five years been a practitioner in Goshen, and who has held high positions in State and local professional societies.

Perhaps there is no toxicological drug employed by dentists about which so little is known as cocaine. Thousands are to-day employing it who do not know its nature, its proper dose, or the remedies to use in case of cocaine poisoning. There may be a partial apology for this in the fact that it is of recent discovery, and that its nature is not completely comprehended as yet, but there is no possible excuse for ignorance of the symptoms of cocainism, or of the general treatment to be pursued in cases of the administration of an overdose of any like preparation.

Cocaine is a crystalline alkaloid, obtained from the Erythroxylon Coca, a South American shrub. The leaves of this plant have long had a local use to relieve hunger and thirst, and to enable the natives to withstand fatigue. The extract, when applied to the eye, produces mydriasis (dilatation of the pupil) and when applied to mucous membrane, or beneath the skin, it produces local anæmia by constringing the vessels, and local anæsthesia through paralysis of the terminal nerve filaments. It is highly poisonous, and its physiological action is apparently identical with that of Theine, Caffeine, Guaranine and Theo-bromine, all of which, as has been shown by Dr. A. Bennet, induce a series of symptoms affecting the nervous, respiratory, circulatory, vaso motor and glandular systems. The probable limit of safety in its administration hypodermically is two and one-half grains, though much larger doses have been taken without serious after effects. Dr. B. M. Ricketts (*Lancet-Clinic*, March 31, 1894,) says that he has used seven and one-half grains of Merck's cocaine within the period of an hour and a half, without toxic effects. It should be remembered, however, that personal idiosyncracies are more apparent under the exhibition of cocaine than almost any other drug.

The first effect of the administration of cocaine is stimulative, and this is followed by the narcotic results. In its action upon nerve centers it resembles caffeine and in its effects upon the circulatory and respiratory organs it is not unlike atropine. The symptoms of poisoning will vary with the personal equation of patients, but it should not be employed in the case of neurotics, or extremely hysterical persons. One of the first unfavorable symptoms will be a greatly increased heart action, because of its stimulating effects. It does not seem to produce the extreme spasmodic symptoms sometimes exhibited by chloroform, but it is sufficiently well marked not to be readily misconstrued. There will probably be a flushed surface, and possible symptoms of local congestion, dilatation of the pupil, increase in the vigor of respiration, with, finally, paralysis of accommodation, loss of consciousness, stertorous breathing, coma and death. In fact, the later symptoms will not be unlike those in narcotic poisoning, and the time that will elapse before death will be about the same as in cases of an overdose of opium. Unless the dose is extraordinary, some hours will probably elapse, and thus ample time will be given for institution of remedial measures, and for the obtaining of such assistance as will be needed.

No absolute antidote to cocaine has yet been presented. But in case of dangerous symptoms supervening, the same general treatment should be pursued that is indicated in narcotic poisoning. In the earlier stages, with the pupils widely dilated and the respiration feeble, small doses of strychnia may be administered. Chemists now manufacture tablets containing the proper dose of strychnia, with other remedies, for hypodermic injection, and any one who is in the habit of giving cocaine should keep them on hand. If drowsiness succeeds, atropia and strychnia may be given hypodermically, in doses of $\frac{1}{100}$ to $\frac{1}{50}$ grs. Alcohol and ammonia may be given hypodermically, and artificial respiration should be resorted to if necessary. The patient should be roused by any necessary means if there are indications of coma, and should be made to exercise freely. Inhalations of nitrite of amyl will be useful as a heart stimulant. The best medical counsel should be sought, of course, and there will ordinarily be abundant time to procure it.

It will be seen from this, that the case of Dr. McDonald at Goshen presented very few of the indications of cocaine poisoning. There was increased heart action, with flushing of the face, but this is to be accounted for by the nervous stimulation of a weakened heart through the natural apprehension of pain from extraction. Probably if no cocaine had been used at all the effect might have been the same. There is, however, a possibility that the dose of cocaine was enough to overstimulate a heart in the condition of that of Mr. Dailey. All the subsequent symptoms were those of complete heart failure, the blueness being indicative of a cyanotic condition, through lack of circulation, the pallor the diminution of blood in the capillaries, the other symptoms being all due to the same cause. He died within ten minutes, from undoubted heart failure, and there were none of the symptoms of cocaine poisoning as they would be exhibited in the later stages of death from this cause.

The preparation of cocaine used was the following:

℞	Atropiæ, ...	grs.	$\frac{1}{10}$
	Stropanthii, ...	"	$\frac{1}{5}$
	Cocaine mur., ...	"	L
	Acidi carbolici, ...	"	X
	Ol. carophyli, ...	m	3
	Aq. Dest., ...	℥	j

This produces a ten per cent. solution, and ten minims of it would give less than a grain of cocaine. Dr. McDonald thinks that not more than five to eight minims were absorbed — probably the former quantity. This would be far within the limits of ordinary safety. A large number of medical practitioners have found a ten per cent. solution preferable to a four or five per cent. Ten minims of the former contain no more of the drug than twenty of the latter, and it can be much more easily administered. A four per cent. solution is no more safe than a ten per cent., save that less of it can be given. If ordinary care is used, the stronger solution presents considerable advantages. Dr. J. E. Boylan stated before the Cincinnati Academy of Medicine, (*Lancet-Clinic*, March 31st) that he at first habitually administered twenty minims of a ten per cent. solution, but has lately reduced the dose. Other practitioners gave much larger doses.

Dr. Hoppe (work cited) believes there is little danger in strong solutions when properly used. He worked for seven months in the clinics of Fraenckel, where only two solutions were kept on hand — one of twenty and one of ten per cent. The opinion of many medical practitioners is that toxic symptoms are as likely to follow the use of a weak as of a strong solution. Toxic symptoms have been observed from the hypodermic injection of pure water in considerable quantities, and neither dentists nor physicians have the right to use any solution in large quantities. Nevertheless, it is probable that for indiscriminate use by dentists of all degrees of intelligence, the solution given above should be reduced by adding an equal amount of distilled water. The preparation used by Dr. McDonald is employed by a number of surgeons of the very highest repute, and the editor of this journal has used it exclusively for about two years.

Many surgeons of the very highest standing use cocaine freely, and without much precaution. One within the circle of our acquaintance says that he expects occasionally to observe toxic symptoms, but these he combats promptly, and always with success. He finds that the cases of poisoning do not necessarily depend upon the amount injected, the dosage being variable, no special indication fixing the particular strength admissible for any individual. The toxic symptoms are apt to be idiosyncratic, and there is no means of determining in advance whether a patient will tolerate the drug well or not.

There is another alkaloid of coca, which has been recommended by some — tropa-cocaine — and this is said to possess but one-half the toxic power of the muriate, but it is only half as efficacious as an obtundant. All of the secret preparations that are offered for painless extraction of teeth, that are of any use, depend upon cocaine for their anæsthetic properties. They should never be used, because the dentist does not know what he is giving, nor should any cocaine mixture be employed unless the administrator knows the character of the unfavorable symptoms which may arise, and what methods to employ successfully to combat them.

It is well known that cocaine rapidly deteriorates in solution when exposed to light and air, but carbolic acid and some other agents are said to prevent or retard this. We have used a single bottle of the formula employed by Dr. McDonald for six months, without any apparent loss of strength or efficiency.

EDUCATIONAL AFFAIRS IN THE STATE OF NEW YORK.

The Empire State has one institution that is peculiar to itself, and that is The University of the State of New York. The organization and objects of this body are not as well known as they should be, nor is its beneficent work in educational affairs as familiar, even to the citizens of this State, as its importance demands. Its influence has not been felt in our own professional affairs, because until a recent period it has not taken any part in professional or technicological teaching. But since the election of the present Secretary of the Board of Regents, Mr. Melvil Dewey, the University has been steadily enlarging its field and broadening its scope, year by year raising the standard of educational matters, gradually bringing all the departments of learning into closer relations with each other, and uniting all into one grand homogeneous system that will ensure thoroughness of instruction in every field, and establish a common standard of erudition that shall be known and respected everywhere.

The University is not, as its name might lead some to suppose, a teaching body. Its founders probably intended that it should in time become a second Oxford or Cambridge, but as its beginning was small, and it was left to time to develop it, the lapse of years has shown that there were other important functions which it might fulfil, and its advance has been in the direction of uniting, supervising and adjusting the whole educational affairs of the State. To this end abundant authority has been gránted it by the Legislature, so that it can compel compliance with its regulations.

The University was first organized in 1784, and it is therefore one of the oldest institutions of the State. It first Chancellor was George Clinton, the first Governor of the State, and DeWitt Clinton was its third Secretary. Among the first and most active of its Regents were Alexander Hamilton, John Jay, and others of the very highest position in the State and Nation. It is governed and all its corporate powers are exercised by a board of nineteen Regents, elected by the Legislature of the State, in the same manner as United States senators. They are the only public officers in the State who are chosen for life. The positions are unsalaried, but are of great responsibility, and an election is considered one of the highest honors which the State can bestow. The Governor, Lieutenant-Governor, Secretary of State and the Superintendent of Public Instruction are *ex-officio* members of the Board.

The Regents have the power to incorporate and to alter or revoke the charters of universities, colleges, academies, libraries, museums and other educational institutions, to inspect their workings, and to require annual reports under oath from their presiding officers, to establish examinations as to attainments in learning, and to confer on successful candidates suitable certificates, diplomas and degrees, to confer honorary degrees, and to distribute the public school funds. It is a department of the State, and at the same time a federation of over 500 educational institutions. In this respect it is in organization not unlike the universities of Oxford and Cambridge, which are formed by the union of their various colleges.

The law allows no option among the incorporated educational institutions of the State as to membership in the University, but says that it shall include all institutions of higher education, which are now or may hereafter be incorporated in the State. It has power to determine the requirements for admission to any educational establishment, and it supervises the granting of all diplomas or degrees. The licensing of physicians is now vested in the Board of Regents, and that of dentists will doubtless soon be assumed by it.

The "Regents' Certificate" is a credential now well known and thoroughly established in the State. Its value is definitely determined, and it accurately marks the scholarship of those who possess it. There are various grades, such as pre-academic, academic, higher academic, law, medical, library and others, and the status is determined by examinations held at set times and places under the direction of the Regents, the papers all being forwarded to and examined by them. The original purpose of these examinations was to determine the number of students in each school who had attained the rank of academic students, that the proportion of that school in the distribution of the academic school fund might be determined. But it was found so effective, and it established such an impartial test, that it has been enlarged in scope, and it now forms the basis for entrance and passing in all the public educational institutions of the State, and has been adopted in the professional schools. These examinations are held each term in each of the 390 academies and high schools of the University, and require over 500,000 question papers annually. Arrangements have now been made by which the examinations will be held in other states, so that students proposing to enter schools and colleges in the State of New York may take their preliminary examinations under the direction of the Regents without making a visit to this State for that purpose. A special value is given to each study, and any student who, at the Regents' examination, passes an average of 75 per cent. in all the questions in that branch, is credited with a definite number of "counts." It therefore remains only for the Regents to require a definite number of counts in any department as a requisite for entrance or passing, and this will form an unerring and impartial standard.

Previous to the year 1890, the Deans of the medical colleges of the State had the authority to endorse the diplomas issued by the medical colleges of other states, and this made them a sufficient qualification for practice. But in that year this power was taken from them by the Legislature, and vested in the Regents. From September 1st, 1891, the power to grant licenses to practice, even to the graduates of medical colleges in this State, was vested solely in the Regents. They were given authority to appoint three Medical Examining Boards of seven members each, representing the State Medical Society, the Homœopathic and the Eclectic societies. These Boards now examine the graduates of all medical colleges, and recommend them to the Regents for license. It is within the power of medical colleges to grant diplomas and degrees, but not to license to practice. None but graduates are permitted to appear before these Boards, and no graduate of a medical college whose standard for matriculation passing and graduation is not as high as that established by the Regents, will be examined or licensed to practice. The number of Regents' counts necessary for one who has not a medical student's certificate is fifty, and they may be selected from the following, each study in which the necessary 75 per cent. is secured counting the number set before it. These counts may be obtained at any Regents' examination, and information as to the times and places, and the regulations under which the examinations are held, may be obtained at any time by addressing the Board of Regents, Examination Department, Albany, N. Y.

REGENTS' STUDIES.

GROUP 1.
LANGUAGE AND LITERATURE.

2 Spelling.
2 English, Elementary.
2 English, Composition.
2 English, Advanced.
2 Rhetoric.
2 English Literature.
2 American Literature.
2 Course in English Reading.
4 German, 1st year.
4 German, 2d year.
4 German, 3d year.
4 French, 1st year.
4 French, 2d year.
4 French, 3d year.
4 Latin, 1st year.
2 Cæsar's Comment.
1 Sallust's Catiline.
2 Cicero's Orations.
1 Ovid's Metamorphoses.
3 Virgil's Æneid.
1 Virgil's Eclogues.
1 Latin Composition.
4 Greek, 1st year.
2 Xenophon's Anabasis.
2 Homer's Iliad.
1 Greek Composition.

GROUP 2.
MATHEMATICS.

4 Arithmetic.
2 Arithmetic, Advanced.
4 Algebra.
2 Algebra, Advanced.
3 Plane Geometry.
1 Solid Geometry.
1 Plane Trigonometry.

GROUP 3.
SCIENCE.

PHYSICAL.

2 Astronomy.
2 Physics.
2 Physics, Advanced.
2 Chemistry.
2 Chemistry, Advanced.

GEOLOGIC.

2 Geology.
2 Physical Geography.

BIOLOGIC.

2 Botany.
2 Zoology.
2 Physiology and Hygiene.

GROUP 4.
HISTORY AND SOCIAL SCIENCE.

2 Geography.
2 General History.
1 Greek History.
1 Roman History.
2 English History.
2 United States History.
2 Civics.
2 Economics.

GROUP 5.
OTHER STUDIES.

2 Psychology.
1 Ethics.
2 Bookkeeping.

FORM-STUDY AND DRAWING.

2 Drawing.
2 Drawing, Advanced.

A student is allowed one year after matriculation in which to obtain the necessary Regents' certificate. Any student who shall have completed one year's course in the collegiate department of any registered college or university, or who shall have completed a three years' course in any registered academy, or who shall be a graduate of any recognized college or university, may be matriculated without the Regents' certificate. The medical student's certificate includes counts in elementary English, geography, spelling, United States history, English composition, and physics. Full counts in these studies entitles the student to matriculation.

The Regents have recently decided to make dentistry a part of medicine, and to consider it as such in the requirements to be demanded of its matriculates and graduates. To this end the standard will be raised to that of medicine, and students will be subjected to the same regulations as medical students. A Regents' medical student's certificate will be demanded for matriculation, and this will be the legal standard for admission. The course of study will include all that is now embraced in the dental curriculum, and will comprise physics, dissections, and some other studies not now always demanded. The Deans of dental colleges will no longer be permitted to conduct examinations for admission, but the student matriculating must, within one year, file a Regent's certificate of the necessary number of counts.

As it would be a hardship to those who had made preparations for entering upon a course in dentistry were the whole system to be changed abruptly, the Regents have decided that three years shall be allowed before the full requirements will be demanded. Students matriculating this fall may, within one year, file a certificate of but six counts, aside from the pre-academic course. Next year twelve counts will be demanded, and the next year twenty-four, after which the full medical student's certificate will be required. But none of these requirements will go into force until August 1st of this year. Therefore, any student who matriculates before that time will not be subject to the new regulations, but will go through his course under the present system.

This is a long and decided step in advance. In the first place, it legally establishes the status of dentistry, and places us upon the same plane with medicine. In the second place, it establishes an impartial and rigid standard for matriculation. Heretofore, the judgment of the Dean of the college was the only rule, and in many cases that was far too lenient. In future, this will be beyond the power of college authorities, and all they can do will be to receive the right to matriculate from unbiased judges. This can but result in a better class of students. Then it materially raises the standard of entrance and establishes a supervision over the curriculum. Within a reasonable time the authority to license to practice will be taken from the colleges, and be assumed by the Regents, acting through an Examining Board. That may be the one now established by law, and which has for twenty-six years acted as the highest power in dentistry in this State. The right to grant diplomas will, of course, be taken from it, as it should be, and under the authority of the Regents it will simply examine for license to practice. This will give uniformity and efficiency to our dental laws. There will be no more tinkering with dental legislation, for the whole matter will be under the supervision of the Regents of the University of the State of New York, and each of the colleges within the State will become one of the federated bodies that form that University.

Not only will it raise the status of dentistry within the State of New York, but it will necessarily lead the schools of other states to take the same ground. The Regents will determine what colleges require the same preliminary education for entrance, and have a curriculum that is as broad and complete, and only the graduates of such colleges will be allowed to come up for examination for license to practice. This is the course now followed in medicine, and it is working very satisfactorily. If any college is not approved by the Regents as reaching the requirements established by them, its diplomas are not recognized as entitling their possessor to an examination for license.

It will thus be seen that dentistry in the state of New York has entered upon a new period of development. A rigid, unbending, yet impartial rule for entrance has been adopted, and a course of study that is obligatory in every case will be laid down. There can be no departures from this, because the final decision rests with a body that is beyond any political or other influence, a body composed of men of the very highest standing, and who are entirely devoted to the cause of education. There will be complete uniformity, because all the schools are united under a State department. This advance of New York schools is protected by the refusal to permit the graduates of colleges of a lower standard from entering upon practice in the State. Hence, the tendency will be to influence all schools to adopt the same standard, and thus our national status will be raised. The working of the new regulations will doubtless be watched with concern by all who are interested in the advancement of dental educational affairs.

CARIES OF THE ALVEOLUS.

As a general rule, dentists have not in the past given as much attention to pathological studies as they should. Our best men have been ambitious to shine as operators, or as mechanics, and have neglected the first and most important of all studies, if we are to be considered in any sense as medical men. Beautiful fillings are too often inserted in teeth that are not in a physiological state, or which are in relation with diseased tissues, and the consequences are sometimes very serious. Many teeth are extracted simply because an otherwise excellent operator is not skilled in diagnosis and treatment. Diseases which, if properly treated at the outset, might be easily cured, are not promptly recognized, and are temporized with, receiving only simple topical applications, until the general surgeon must be called in to remedy the effects of the lack of knowledge. Serious tumors have been dallied with until they have invaded tissues which should have been saved from their ravages.

Many of our schools have not given the attention to surgical pathology that is its due. In some there is no real comprehensive course of lectures upon this subject, the usual diseases of the teeth themselves comprising the instruction in this department, surgery of the jaws and face being entirely relegated to the general practitioner. There is some excuse for this in the fact that our curriculum is already so broad that it is difficult in a term of six months to find time for the other lectures and demonstrations. Yet the dentist certainly should be able to diagnose any diseased condition, even though he should desire to turn it over to a specialist.

But there are some conditions requiring surgical interference that should never be allowed to go out of the dentist's hands. One of these is caries of the alveolus. This is a disease that is far more common than the average dentist is aware of. By it is meant the death and disintegration of the alveolar portions of the bone, cell by cell, and without any serious complications. It differs from necrosis in that there is not usually any formation of pus, or at least but little, no special tumefaction or inflammation of the soft tissues, and no tendency toward a sequestrum. In necrosis there is a stoppage of nutrition throughout a considerable portion of the osseous tissue, while in caries it is a slowly progressing ostitis that breaks down the bone one cell at a time.

Not infrequently in the filling of cavities in proximate surfaces of the teeth, which extend well up in the cervical region, the alveolus between them is injured by wedges, or matrices, or separators, and this induces an ostitis which results in a caries that causes the loss of the whole of the septum. It is at best but a thin lamina, and hence is specially liable to loss of nutrition through injury. We have known cases in which true necrosis has been the result of such injuries, and a real sequestrum of bone has exfoliated.

Sometimes when there has been violent periostitis about a tooth root, the inflammation has spread to the bone and a carious action been set up. In many instances this will continue after extraction. The cavity perhaps will not fill up by organization of the plastic exudate, the gum will not heal over, and a small cavity will be left. There will be little of inflammation or soreness, and the attention of the patient will not be called to it until the cavity has assumed considerable proportions. If, then, an examination be made with an exploring instrument, the bone will be found bare, and it will be soft and spongy. It will not feel precisely like necrotic bone, but the difference between this and sound tissue can be readily recognized.

A carious condition of the alveolus will sometimes be the result of an anæmic or atonic state. It may be indicative of an inherited syphilitic taint. Of course, it will be most often found in those who are in a debilitated state. The dentist should always examine for this when such patients who have been subjected to dental operations fall into his hands. It may be that he will need to scrutinize closely, for sometimes it is not very manifest.

The treatment, of course, is carefully to remove that which is carious and spongy, apply antiseptics, these to be followed by stimulating applications, like iodide and chloride of zinc, ten to twenty grains to the ounce of water. If the caries is at all extensive, the patient will probably be in an atonic condition, and alteratives, with liberal diet and careful hygienic precautions should be prescribed. Preparations of iron may be administered. The hypophosphites are useful, and tonics generally. If there is reason to supect any constitutional taint, iodide of potassium may be prescribed, or the syrup of iodide of iron, from twenty to forty drops three times per day.

But if the dentist does not desire to attempt general remedies, at least he can and should remove the carious bone by means of bone curettes, or perhaps the engine bur, and give such topical treatment as is needed. Unless he is competent to diagnose the condition and do this much, he can scarcely call himself a surgeon dentist.

THE SEMI-CENTENNIAL OF THE DISCOVERY OF ANÆSTHESIA.

The year 1844 gave to surgery one of the greatest boons ever conferred upon suffering humanity. The discovery of anæsthesia marked a distinct era, and the credit of it, by universal consent, belongs to dentistry. As in the case of all other great discoveries, a number have claimed to originate it, but the consensus of opinion has awarded to the dentist, Horace Wells, of Hartford, Conn., the honor of first demonstrating it, and his name is enrolled among those highest in the temple of fame as being one of the greatest benefactors of any age. This is the semi-centennial year of its discovery, and dentistry should not miss the opportunity of reminding the world of the debt which it owes to a member of the young profession. Dentists themselves use anæsthetic agents largely in their practice, and they would be recreant to duty and prove themselves but ingrates if they did not in some way mark the occasion by a fitting observance of the anniversary.

The Odontological Society of Pennsylvania took action early in the year, by appointing a committee to take the matter into consideration. The Dental Society of the State of New York, at its annual meeting early in May, appointed a committee to take action upon the part of the dentists of the State. The Connecticut State Dental Society, at its annual meeting, passed resolutions which will be found on another page of this number, and appointed a committee to arrange a semi-centennial celebration, and other societies will doubtless take similar action.

But the subject is too great and too comprehensive in interest to be monopolized by any single body of men. Every dentist throughout the world is concerned in the matter, and should have an opportunity in some way to assist in celebrating an event that must be to him a matter of personal pride. But the time is limited, and whatever is to be done must be done quickly. Half the year has flown without any general organization having been effected, and unless immediate action be taken the most momentous event in our professional history will not receive the attention which its importance demands.

In this emergency we take the liberty to suggest that every dental society in the land, as far as possible, appoint delegates to meet at Old Point Comfort at the time of the annual sessions of the American and the Southern Dental Associations, there to agree upon some concerted plan of action. It is no time for any elements of personality to enter into the consideration of the matter, or for any claims of priority in conception to be urged. Let us as one man unite in honoring ourselves and our profession, by doing honor to the memory of the man who did so much to honor us. We sincerely hope that there will be a unanimity of feeling among us, and that every dental society, especially every State organization, will through its proper officers appoint a committee to meet at Old Point Comfort, Virginia, in August next. We commend the subject to our brother editors of dental journals.

WHY IS THIS THUS?

Perhaps it *is* a hardship to our brother of *The Dominion Dental Journal* that we should object to seeing the dentists of America constantly placed in a false light. Well may he ask what he is to do for subjects if he must be deprived of the privilege of writing and publishing invective articles concerning American dentists, American degrees and American educational institutions. For some time these articles have averaged rather more than two to each number, so that it would appear that when the printers' cry for "copy" reverberates through the sanctum halls, he gives the American handle of his editorial machine a few turns, and out comes a yard or so of the same old pattern. Well, we know what it is to be short of subjects for editorials. Our friend's condition appeals to a tender spot in our sympathies.

But, really, this is getting to be somewhat monotonous, as the man said when he had dined on hash for the sixty-third time. Some months ago we served due notice that, for one, we proposed that these stale accusations should no longer go by default, and we intend to see the thing through. But one thing we never anticipated, and that is being accused, especially by a Toronto brother pedagogue, of illiberality and prejudice because we objected to having our hair pulled and our pet corns trampled upon. "Ma! ma! Pa wont let us amuse ourselves," cried the outraged children, when *pater familias* objected to their stuffing straws up his nose.

That the good editor of *The Dominion Dental Journal* despises the American degree he has on many occasions assured us. Very well, let it go at that; but if he persists much longer in unnecessarily reasserting it, the people will begin to think that the D. D. S. and his barrenness of degrees are matters of far greater importance than they had imagined.

Our brother is really a good fellow, and certainly there can be no two opinions concerning his ability and earnestness. If this were not so, we should not take the trouble to differ from him, and to labor so earnestly to convince his great stubborn heart of the error of his ways. It is not worth while to attempt the conversion of either a fool or a knave, for neither will stay converted. Nor is there any covert sneer in this assertion, for there are really few men in dentistry whom we more respect and esteem—a little given to boasting, perhaps, over Canadian affairs that do not seem to the average alien of such overwhelming importance, though we think none the less of a man for standing up stoutly for his own country, provided it is assailed, and provided that he really has a country—but is he not playing too much on the base string? Why not change the tune for a while, and try earnestly if there be not harmony instead of discord in his fiddle? He may not be aware of it, but there really are good Americans, and honest, conscientious, even able men among American professional teachers; aye, and there always have been such. When he reaches the dentists' Valhalla, in the honeyed hereafter, he will be obliged to associate with some of them on even terms. Then why not begin the harmonious work here? What is the use in putting on blue colored glasses every time one looks across the boundary lines? There are no politics in professional affairs, and science knows no bourne of State, no national limit of fraternity.

But all the same, we still insist that we will not have our hair combed the wrong way. We love our country and our countrymen as dearly as our brother can love Canadians, and we will stand up as stoutly for them. There is here no jealousy of the people across the border. There is nothing to be jealous of. We have no petty, impotent spite to vent. In dentistry we are steadily making progress, and we hope to do so for some time to come. If we were to allow ourselves to indulge in a little harmless Canadian boasting, we should probably remind them that we started a little earlier on this road than our neighbors, and have so far been able to keep out of their dust. But our American modesty forbids such an intimation. This journal will continue, as in the past, earnestly to labor in the cause of professional advancement, for perfection is not yet quite attained on this side the line. If our Canadian brother is entirely satisfied with his superiority we are not envious. Only, one thing we must insist upon—

KEEP OFF OUR TOES

—they are tender.

WATER DRINKING.

One frequently comes across articles in medical and other journals warning people to be abstemious in water drinking. The so-called health journals are particularly prone to give advice of this character, though no two of them agree in the details. One directs that water should only be taken before meals, another insists that it must be drunk only afterward, while some declare that it should not be taken at all, if it be possible to avoid it. To the man who thinks for himself, all this is the veriest nonsense. Water is the universal solvent of the human system. All the effete matter must be eliminated by its aid, and the greater the waste the more the necessity for taking plenty of it. If there be unusual exertion of any kind, there will, of course, be an excessive amount of urea in the body, and this should be held in solution by water.

Let any man whose functional activity is great watch the effect of abstaining from fluids. Quite probably he will find his urine becoming turbid, with dark deposits, and there will be a tendency to their retention in the tissues. This means rheumatism, gout, calculi and the other evils resulting from a lithæmic condition. Let such an one then drink plenty of pure water and the morbid symptoms will disappear, unless they be due to inactivity of the kidneys. But these organs are not often unfavorably affected by any quantity of pure water.

The skin has important emunctory functions, and through the perspiration is carried off much effete matter. But if the tissues be poorly supplied with the necessary amount of water, the perspiratory glands become inactive, and there is a lack of their depurative influence. Fevers may frequently be aborted or broken by the free use of pure water. The temperature of the body is kept at its normal point by the evaporation of water from the surface of the skin. All the secretions of the body are dependent upon water for their integrity. The nursing mother who has a large supply of milk must drink a great deal. People may do without food for a long time if they are plentifully supplied with water, but no amount of solid matter can compensate for a lack of fluids.

If any one is undergoing great exertion, let him partake freely of fluids and he will find that he will be less exhausted at the end of it. We have frequently tested this, and when we have found it necessary to labor unusually hard have made it a point to drink water freely and frequently, not waiting for extreme thirst, but taking a glass of it whenever we felt that it could be drunk without discomfort. Of course, there is a difference among men in the amount necessary to health, but we feel assured that if many of our hard working dentists would make a point of drinking more water, they would avoid that feeling of complete exhaustion which overtakes them, for the waste products of their exertion would be more speedily and completely eliminated.

BIBLIOGRAPHICAL.

THE ETIOLOGY OF OSSEOUS DEFORMITIES OF THE HEAD, FACE, JAWS AND TEETH. By Eugene S. Talbot, M. D., D. D. S. With four hundred and sixty-one illustrations. Third Edition; revised and enlarged. Chicago: The W. T. Keener Company, 1894.

For twenty years Dr. Talbot has made the study of cranial and facial deformities a specialty. He has not been tempted from this field by any of the questions in dental practice which during that time have come to the front. He has laid all sources of information under contribution, and with his experience, intelligence, enthusiasm and steadfastness, it is little wonder that he has accumulated a mass of information and a wealth of statistics that, when embodied in a single book, makes it of more than ordinary value. This volume is called by the author the Third Edition of his former work. But it is much more than that. It is, practically, a new treatise. The first edition was, comparatively, but a mere pamphlet. The second, "Irregularities of the Teeth and Their Treatment," issued in 1890, had grown to a work of 250 pages, with two hundred and thirty-four illustrations, while the present volume contains about five hundred pages, with 461 illustrations, and is confined entirely to etiology.

It will be seen, therefore, that this is emphatically an evolution of thought. In it the author traces natural deformities, not only to inherited physical malformations, but to ancestral mental peculiarities and tendencies. It is at times somewhat difficult to recognize the direct influences of some of the elements which he cites as factors in facial deformities. Their connection seems obscure and recondite, but he substantiates his assertions by abundant statistical tables. Certain it is, that he has pursued the subject of the etiology and origin of abnormalties in structure to a greater depth than any of his predecessors. He has studied it from every standpoint, and like others, who devote themselves exclusively to one special field, it is little wonder that he finds all roads leading to the one central point. The ordinary observer would scarcely include inebriety, pauperism, immorality, mental degeneracy, and all kinds of neuroses, as tending to facial deformities. Yet the author of this work traces their directing agency, and backs up his theories with statistical tables that are staggering in their application. His extended studies and long experience enable him to follow analogies, and to detect associations that are not within the field of vision of the average student.

The book is a mine of etiological wealth, and future writers upon odontotherapy must draw largely from its pages. The author has mined much ore that is not reduced, and there is within the book ample material for the mental crucibles of future workers in the same field. Despite a few seeming crudities of conclusion, the fact must remain that the book is the most valuable contribution to abnormal osteogeny and odontogeny that has yet been made. When the fourth edition is issued, we shall look to see all the material contained in this thoroughly digested, and much more added, for the author is not one who will, while life lasts, cease the accumulation of statistics and the gathering of information from original sources.

A CONFLICT OF EVIDENCE. By Rodrigues Ottolengui, author of "An Artist in Crime."

A MODERN WIZARD. By the same author. New York: G. P. Putnam's Sons, 1894.

These two new novels by Dr. Ottolengui will not diminish the reputation won by him with his first work of fiction, "An Artist in Crime." In noticing the latter, something more than a year ago, we said that in originality of conception and perfection of plot it was strongly suggestive of that master of fiction, Wilkie Collins. The two books now under notice contain no sickly sentimentality, no puling affectation, no silly languishment. They are virile, healthy, strong in tone, pure in feeling, sweet in thought and clear in diction. Their chief beauty lies in the intricacy and yet the general consistency of their plot, and the skill and completeness with which it is worked out. Every personage is a study by itself, and the relations of the various characters are always as perfectly sustained as they should be in actual life. Indeed, it is this vividness of drawing and the clear individualization that assist greatly in making Dr. Ottolengui's books so charming. This, with the admirable sketching of the incidents and the absorbing interest of the situations, keeps the reader's attention absorbed until the end is reached, and the book is laid down with a sigh of satisfaction.

In "A Modern Wizard," Dr. Ottolengui has introduced bacteriology, and in the first part of the book the interest centers upon the possible inoculation of one of the characters with cultures of the microbe of diphtheria, by Dr. Medjora, who is supposed to have been far in advance of his age in bacteriological knowledge. He has even discovered the bacillus of insanity, and finally winds up his career with the madness induced by infection.

Hypnotism is also woven into the narrative. The Modern Wizard is a hypnotist, and works many of his startling effects by its means. The numerous medical questions are ingeniously introduced, and give to the professional reader an additional interest in the book.

Each of the books will be found far above the average of the works of light fiction, and we can but advise their purchase by the dentist who has a pride in that which is done by a member of his own profession. They will make excellent reading for the summer holidays.

CURRENT NEWS AND EXCERPTS.

OUR COLLEGES.

There are now but very few States in which it is possible to enter upon the practice of dentistry without the diploma of a reputable dental college. The number of graduates increases year by year with the necessity for a college training, and the time is not distant when there will practically be no dentists who are without diplomas. The number of students and of graduates of each of our colleges during the past year is given in condensed form below. The statistics of Harvard and the University of California are for the preceding year.

Chicago College of Dental Surgery, ...	Matriculates,	360	Graduates,	58
New York College of Dentistry, ...	"	294	"	62
Pennsylvania College of Dental Surgery, ...	"	274	"	62
Philadelphia Dental College, ...	"	304	"	77
Baltimore College of Dental Surgery, ...	"	146	"	37
Ohio College of Dental Surgery, ...	"	151	"	34
Boston Dental College, ...	"	148	"	33
Kansas City Dental College, ...	"	113	"	16
Missouri Dental College, ...	"	94	"	21
Indiana Dental College, ...	"	104	"	23
Louisville College of Dentistry, ...	"	90	"	9
Southern Medical College, Dental Department, . . .	"	31	"	4
American College of Dental Surgery, ...	"	248	"	43
Detroit College of Medicine, Dental Department, . .	"	38	"	1
Cincinnati College of Dental Surgery, ...	"	18	"	5
Harvard University, Dental Department, ...	"	53	"	14
University of Michigan, Dental Department, ...	"	185	"	63
University of Iowa, Dental Department, ...	"	148	"	31
University of Pennsylvania, Dental Department, . .	"	231	"	65
University of Maryland, Dental Department, ...	"	145	"	34
University of Denver, Dental Department, ...	"	18	"	3
Vanderbilt University, Dental Department, ...	"	128	"	25
University of Buffalo, Dental Department, ...	"	88	"	6
Western Reserve University, Dental Department, . .	"	30	"	4
Columbian University, Dental Department, ...	"	28	"	8
University of California, Dental College, ...	"	114	"	28
Northwestern University, Dental School, ...	"	95	"	25
Western Dental College (Kansas City), ...	"	126	"	26
Royal College Dental Surgeons of Ontario, ...	"	96	"	29
Ohio Medical University, Department of Dentistry, .	"	23	"	2
Meharry Dental College, ...	"	10	"	3
Atlanta Dental College, ...	"	118	"	26
Ohio Medical University, Department of Dentistry, .	"	23	"	2
Cleveland University, Dental Department, ...	"	—	"	4

THE ELEVENTH INTERNATIONAL MEDICAL CONGRESS.— This meeting was held in Rome at the time selected. It was unfortunate that it was necessarily postponed once, and this, with the comparative weakness in number of the Italian members, militated against it. There were less than one hundred and fifty members present, but a great deal of interest was manifested by those who did attend.

The Section of Odontology suffered with the rest. Not a delegate from America was present. No less than eight from this country had promised papers, and their names were on the programme, but not one of them showed up, nor was anything heard or seen of their promised papers. Nothing was heard from even the organizer of the American department, or his promised communication.

CONNECTICUT STATE DENTAL ASSOCIATION.

At the late annual meeting of the Connecticut State Dental Association, the following resolutions were introduced by Dr. James McManus.

Resolved, That the members of the Connecticut State Dental Association in commemorating the semi-centennial of the discovery of anæsthesia, feel it a duty briefly to restate and publish a few facts, so that the present and future generations may know the truth regarding it. In the ages past, many men may have given one or more drugs with the hope of giving freedom from pain during surgical operations, but the fact is indisputable that Dr. Horace Wells, of Hartford, Conn., was the first man deliberately to take by inhalation an anæsthetic and persistently to proclaim to the world that a surgical operation had been performed on him without pain, while under the influence of nitrous oxide gas, (an anæsthetic,) December 11, 1844.

We would not detract from, but willingly give all due credit to the men who have since that memorable day introduced other more powerful and dangerous anæsthetics, which for a time were so successfully forced upon the public by the recommendations of the medical fraternity that the safer anæsthetic discovered by the dentist, owing to his early death, was nearly stamped out, and humanity for many years was deprived of its use and its blessings, until it was again taken up by Connecticut dentists and its value as a safe anæsthetic proved daily in thousands of operations since 1863.

The physicians and surgeons of the city of Hartford united in a testimonial declaring their belief in the justice of the claims of Dr. Wells, in 1845 and 1846.

The General Assembly of Connecticut, in 1847, passed resolutions in favor of Dr. Wells as the discoverer of anæsthesia, and declared that he was entitled to the favorable consideration of his fellow citizens, and to the high credit of a public benefactor.

The Court of Common Council of the city of Hartford passed resolutions to the same effect. In France, the medical society in Paris, January, 1848, voted: "To Dr. Horace Wells, of Hartford, Conn., is due all the honor of having first discovered anæsthesia."

The State of Connecticut and the City of Hartford, with the added contributions from citizens of this and other states, have had placed in Bushnell Park, in Hartford, a portrait statue in bronze of Dr. Horace Wells, and the past year the Board of Dental Commissioners have had stamped on their certificates of registration and license a seal on which is a medallion head of Dr. Wells, to remind all dentists in this State of the honor due to his memory.

The public should not be allowed to forget that the simple, honest, Christian desire of this dentist was to give his discovery to all, to be "free as the air we breathe," and his course in regard to it stands out grandly, when compared with the extortionate plans laid by all other vendors of secret anæsthetics, for the use of which they demand of suffering humanity an unjust tribute.

Drs. George L. Parmele, James McManus, and Civilion Fones, have been appointed a committee to arrange for the semi-centennial celebration. It is proposed to have a banquet, and to place a memorial tablet to mark the spot where the first operation under an anæsthetic was performed.

DIPLOMA AND LICENSE.— In England, the dental schools are teaching and licensing bodies, but confer no degrees. In America, they are teaching bodies solely, granting a diploma as an evidence of a completed curriculum. In some states, that diploma is, of itself, a license to practice, while in others it is not. The tendency here seems to be to make education a general and inter-state affair, while licensing to practice shall be under State regulation.

OBITUARY.

Charles Barnes, D. D. S.— Died, at Middletown, N. Y., June 3, 1894, of apoplexy, Dr. Charles Barnes of Syracuse. The news of this death will bring sorrow to many hearts. About the beginning of the year his health failed and he was obliged to give up his active practice. He seemed recovering until a few days before his death, when there was cerebral hemorrhage from which he never fully rallied.

He was born, May 22, 1837, in Tenterden, England, and while a youth came to Syracuse, which was henceforth to be his permanent residence. In 1865, he graduated from the Philadelphia Dental College, and shortly after commenced practice with the late Dr. Wescott, one of the notable dentists of his time. After this he established himself independently, and henceforth enjoyed a large and lucrative practice.

He was one of the organizers of the Dental Society of the State of New York, and for some years was its faithful secretary. He was one of the most genial and pleasant of men, and always enjoyed the confidence, not only of his large circle of patients, but of his brother dentists. Earnest, honest, faithful, cordial, he made many friends because he was always friendly. He was never ambitious of place or power, but when in positions of trust he discharged his duties with the same scrupulous zeal that he manifested in every relation of life. No man dying ever left behind him a sweeter name than did our friend of more than a quarter-century, Charles Barnes.

UNIVERSITY OF BUFFALO—DENTAL DEPARTMENT.

The second annual commencement exercises of the Dental Department of the University of Buffalo were held in connection with those of the Medical and Pharmacal Departments, in Music Hall, in the City of Buffalo, on the evening of Tuesuay, May 2, 1894. The examinations before the Board of Curators (comprising the State Dental Examining Board) took place during the day, and at their close the following candidates for graduation were recommended to the Chancellor for the degree of Doctor of Dental Surgery, which was accordingly conferred upon them: Joseph Wright Beach, Arthur George Bullock, Seymour Edwin McDougall, Joseph Lester Povall, Frank Liberty Sibley, William Henry Snider.

The session opened September 25, 1893, and closed May 1, 1894, after a full term of seven months. The number of matriculants was eighty-eight. The next term will open September 24, 1894. A. P. Southwick, *Secretary*.

An Anniversary Year.—The fiftieth anniversary of the discovery of anæsthesia, to which attention is called upon another page, should be made one of the events in our history. Advance copies of the editorial were mailed to our brother editors, and it is hoped that through their influence action will be taken by leading dental societies of the United States. Correspondence with those interested is solicited by the Editor of this journal, on the part of the committee appointed by The Dental Society of the State of New York.

A Dental Revolt.—In France, a dentist is a necessary and legal appendage to every match factory, that the work-people may be protected against phosphor-necrosis. But as the dentist does not depend upon the good will of those who are his patients for his practice, he does not always exhibit the gentleness and politeness that is desirable. So in one such establishment they protested against his brutality in an effectual manner. They mobbed him until he resigned.

A JOLLY TIME.

One of the principal functions of the modern Dental Society is the cultivation of social relations. In this respect we should judge that the last meeting of the Vermont State Dental Society was pre-eminently successful. A considerable part of this was no doubt due to the Canadian contingent which was in attendance, for that country has representatives among its dentists who would enliven an Egyptian mummy. The following capital paragraph is extracted from a report in the *Dominion Dental Journal:*

> "THE TROTTERS."
>
> "After the banquet, this ancient and mysterious organization, born in the State, met in Room 26 to drink the usual two hundred and forty toasts in their own club concoction, the formula for which, with all respect to the Code of Ethics, cannot be printed on the label. Candidates, upon initiation, are obliged to swallow the mystic cup "Orangesoapcork." One candidate was initiated fifteen times. It is a specific for constipation. An international contest occurred between the champion "Trotters" of the United States and Canada. The American brought down the house, and the Canuck brought down the bed. Two hundred and forty-two fish stories were told. Dr. Young of Concord told two hundred and forty-one. The remaining members told the other. The meeting then adjourned for breakfast."

AMERICAN DENTAL SOCIETY OF EUROPE.--The American Dental Society of Europe will hold its 19th meeting at Geneva, Switzerland, Aug. 6, 7, and 8, 1894. Last year this annual gathering was omitted, as many members wished to attend the Columbian Dental Congress. American colleagues who may be taking a summer vacation abroad are cordially urged to combine with their plans for travel and sightseeing a visit to their professional brethren in Europe, and to join in the various exercises of the occasion. Members of the profession everywhere will be welcome. Programmes may be had on application to the president, Dr. L. C. Bryan, of Basel, or to the undersigned.

CHAS. W. JENKINS, Secretary,
No. 1 Sonnenquai, Zürich.

DR. LORD'S SICKLE SCALERS.—Sometime since we received a set of scalers devised by Dr. Benjamin Lord, of New York. They are called the "Sickle" scalers, because of their peculiar shape. But they differ from all other instruments that we have seen, in having both margins concave, so that either of the curved borders presents a double edge, which can be readily sharpened. They may, therefore, be used with either a pushing or a drawing motion. We have been using them for several months with constantly increasing satisfaction. We have never met with an instrument that will remove the dense, hard concretions of serumal calculus so effectually, in any place that is accessible to them. At first sight dentists will be under the impression that they are like some others offered for sale, but a closer examination will show that they are quite unlike.

PROFESSIONAL DEGREES.—Last year the medical schools of the State of New York granted the degree of M. D. to 558 men and 38 women. This makes a total of 23,826 degrees of Doctor of Medicine conferred within the State since its organization. The dental schools conferred the degree of D. D. S. on 52 men, making a total of 918 from their origin. The pharmacal schools conferred the degree of Ph. G. (Graduate in Pharmacy) upon 151, making a total of 1,933, and the veterinary schools added 52 D. V. S. (Doctors of Veterinary Surgery) and 21 V. S. (Veterinary Surgeon), making their total 660. It will thus be seen that dentistry is not adding to its numbers as fast proportionally as is medicine.

"AMERICAN DENTISTS."—Prof. Park, of Buffalo, had a dental experience in Cairo, Egypt, last winter. He saw the sign "American Dentist" on a door plate, and ventured in. He found that the proprietor was a Swiss, born in Zürich, educated in Germany, and trained in France. He spoke German and French, but had no knowledge of English, and had never been in America. He based his claim to being an American dentist upon the fact that he was possessed of a set of operating instruments made in America. The European woods are full of such "American Dentists."

A BLUNDER.—Through some error of the statistician, the names of two of the students of the Dental Department of the University of Buffalo were omitted in making up the roll for the annual commencement and catalogue. They were Mr. W. E. Jenney of Lockport, N. Y., and Mr. H. J. McLellan of Woodstock, Ont., both juniors, who have for two years been students in the school. The addition of these names makes the total number of matriculates eighty-eight instead of eighty-six.

DEATH FROM THE BITE OF A PATIENT.—A case of considerable interest to both physicians and dentists lately occurred in Berlin. A young dentist, Dr. Bernstein, extracted a tooth for a lady patient. In some way she suddenly closed her mouth, biting his finger. A few hours later, intense pain and swelling ensued, and the finger was promptly amputated. But despite the operation and every other remedial measure that the physicians could apply, death occurred on the third day, from septicæmia.

COMPLIMENTS AND REGRETS.—The editor of this journal regrets his inability to accept the kind invitation of Mr. Alfred Burne, President of the British Dental Association of New South Wales, Australia, to join a distinguished party at dinner at No. 1 Lyons Terrace, Hyde Park, Sydney, on Friday, May 4th, at 7 o'clock. Previous experience of Mr. Burne's rare ability as an entertainer but intensifies the disappointment in not having received his invitation until June 15th.

MECHANICAL TRAINING.—There are indications that our English brethren are recognizing the deficiencies of their educational system in training students in prosthetic work. America could never be brought to submit that important part to irresponsible and often incompetent practicing preceptors. Besides, the system of apprenticeship savors too strongly of trade, and is unprofessional in its tendencies.

ANOTHER DENTAL JOURNAL.—*The Revista Estomologica*, a new dental journal to be published in Madrid, Spain, has been received. It will be devoted to reform in dental education, the advance of dentistry in Spain, and to the social elevation of the profession generally, and its first appearance is very promising.

A VETERAN.—Many will be glad to know that the venerable Dr. W. H. Morgan, Dean of the Dental Department of Vanderbilt University, is in improved health. He has not yet joined a base-ball team, but if he should continue to improve long enough he may do so.

AMERICAN DENTAL ASSOCIATION.—The thirty-fourth annual session of the American Dental Association will be held at Old Point Comfort, commencing at 10 A. M., Tuesday, Aug. 7, 1894. GEO. H. CUSHING, *Recording Secretary.*

THE
DENTAL PRACTITIONER
AND ADVERTISER.

VOL. XXV.—BUFFALO, N. Y., OCTOBER, 1894.—No. 4.

THE VAULT IN ITS RELATIONS TO PATHOLOGICAL CONDITIONS OF THE JAW AND NOSE.

BY E. S. TALBOT, M. D., D. D. S., CHICAGO, ILL.
FELLOW OF THE CHICAGO ACADEMY OF MEDICINE.

Dr. Louis Starr, of Philadelphia, has just published a book with the title of "An American Text Book of Diseases of Children." The title, and the fact that the list of contributors consists of sixty-three professors and teachers in the different medical schools of the country, would lead one to believe that the work contained the latest and best thoughts of the medical profession upon the etiology and treatment of the diseases of children.

Among the subjects considered, is "Diseases of the Pharynx and Naso-Pharynx." This is discussed by a professor in one of the leading medical colleges. A part of this chapter does not accord with the latest researches, and hence merits criticism from the standpoint of actual experience. That there may be a full comprehension of the meaning of the author, a part of the text, with the illustrations under discussion, are cited as published. After describing the disease, the author says: *

"SYMPTOMS.—The space of the naso-pharynx is designed to serve as a common area of air-communication between the five openings which enter it. The Eustachian tubes open into it, one on each lateral wall posterior to the nasal choanae, and upon perfect patency of these openings, together with free nasal respiration, the power of hearing is dependent; for ventilation with normal air-pressure in the cavity of the

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* Starr's American Text Book of Diseases of Children, page 445.

middle ear is essential to correct auditory sense. The adenoid excrescences, when large, are forcibly compressed between the lateral walls of the naso-pharynx, or they overlap the tuber of the Eustachian orifice from above, acting in either case as a stopper to one or both openings; or else the vegetations which are crowded in above and behind the Eustachian tubes deform and close the orifice by forcing its upper projecting lip downward to meet the lower border of the rim. * * *

"Again, even with lesser hypertrophy, the accompanying catarrhal state is prone to extend by continuity of surface along the Eustachian tube, and to excite exudation or suppurative inflammation of the middle ear. Deafness, therefore, is frequently a deplorable symptom, and one which is liable to become permanent unless speedy relief be afforded.

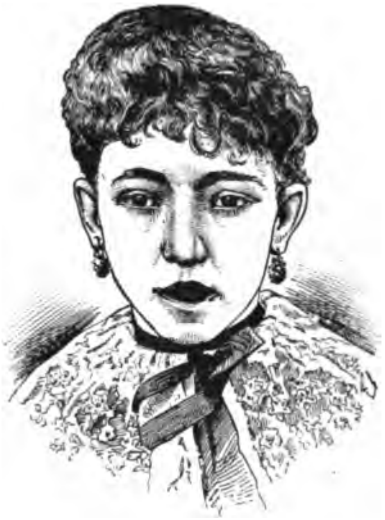

FIG. 1.

"Into this space open also the posterior nares, the natural respiratory passage being *via* the nose and naso-pharynx. Adenoid hypertrophy, therefore, serves as a plug to the posterior nasal openings, and obstructs nasal respiration completely, or in part, according to the degree of glandular enlargement. From this point, we find it a matter of exceeding interest to trace the origin and development of each successive step in the series of deformities consequent upon this condition. The plugging up of the posterior nares necessitates oral breathing, and the constantly open mouth interferes with the normal adaptation of certain facial muscles, which in turn effects radical changes in the contour of the soft and developing bones of the face, the whole resulting in a physiognomy characterized by a vacant, stupid, almost idiotic expression of countenance, which can be better illustrated by a photograph from nature than described. (See Fig. 1.)

"The hanging lower jaw causes the face to appear elongated; the nose is pinched or its alæ distended, while the angles of the mouth and eyes have a drawn appearance.

"Moreover, the air-cavities in communication with the nose, as the frontal, maxillary, sphenoidal and ethmoidal sinuses, which are essential to the proper expansion of their respective bones, cease to develop when the circulation of air through the nose is interfered with, thus altering nature's intent regarding the dimensions of the face and head, and still further deforming the physiognomy. Augmentation of atmospheric pressure upon the buccal surface of the palate process and the impact of air-currents to and fro during mouth-breathing, together with the diminution of intra-nasal air-pressure incident to nasal obstruction, gradually force upward the centre of the hard palate and change thus the obtusely rounded Romanesque arch into one of Gothic shape — the pointed or high-arched palate commonly existing in association with long continued and excessive adenoid development during childhood. (See Fig. 2.)

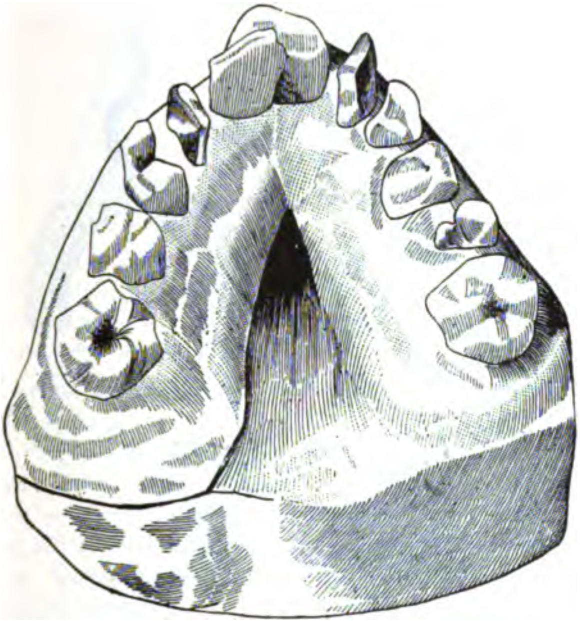

FIG. 2.

"Elevation of the palatal arch lessens the traverse diameter of the jaw and causes it to grow pointed in front — the so-called V-shaped denture; and with the resulting contraction of the alveolar process, the teeth, especially those near the point, are gathered into various grotesque aggregations, or are rotated on their axes — a condition depicted in

Fig. 2, drawn from a typical case in which the two central incisors overlap, and the two lateral incisors undergo a quarter rotation and stand at right angles to the alveolar process.

"It is proper to state that this relation of mouth-breathing to deformed dentures is questioned by some dental authorities, who attribute the elevation of the palatal arch solely to a perverted production of the permanent teeth. The association between the adenoid hypertrophy, as a cause of mouth-breathing, and the high arched palate is, however, so constant that an etiological relationship is most probable.

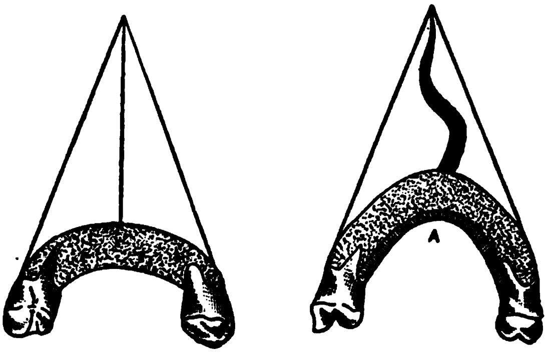

FIG. 3.

"Next, elevation of the palatal arch must produce contortion within the nose, for the septum, composed of the vomer, the perpendicular plate of the ethmoid bone, and its cartilaginous portion, is unequal in power of resisting compression to the bones by which it is encased. Designed by nature to fill vertically the natural space between the roof of the nose and its floor, the abbreviation of this space by elevation of the palatal arch through the instrumentality of naso-pharyngeal adenoid hypertrophy, cannot result otherwise than in forcing the septum to provide for itself by bending and curving laterally in various directions — a condition which is diagramatically represented in Fig. 3.

"The septal deflection acts as an additional impediment to nasal respiration and drainage, and becomes a potent factor in the evolution of hypertrophic rhinitis, or that form of nasal catarrh characterized by enlargement of the turbinated bones. (See Fig. 4.)

"Headache is also complained of, although a sense of mental obtundity and heaviness is more usual than absolute pain in the head. Finally, not only, as before said, do these unfortunates *look* stupid, but they really *are* stupid, and exhibit abundant evidence of mental hebetude, with inability to fix the attention, to learn, to memorize, or to reason.

"Three varieties of thoracic deformity are observed to accompany obstructive naso-pharyngeal adenoid hypertrophy, the association of one or other form, in advanced cases, being so constant that a direct causal relationship, although difficult of absolute demonstration, can reasonably be assumed.

"For the induction, however, of two of these forms, the 'Pigeon-breast' deformity and the 'barrel-shaped' chest, the intermediation of still another symptom, bronchitis, seems essential; but adenoid hypertrophy is an etiological factor in the production of chronic bronchitis. Especially in neurasthenic individuals, it is exquisitely sensitive to reflex-producing impressions, and its irritation may result, reflexly, in spasm of the glottis, cough, asthma, and paretic vaso-motor bronchitis.

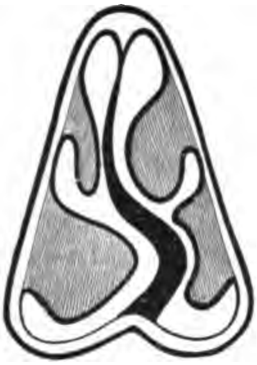

FIG. 4.

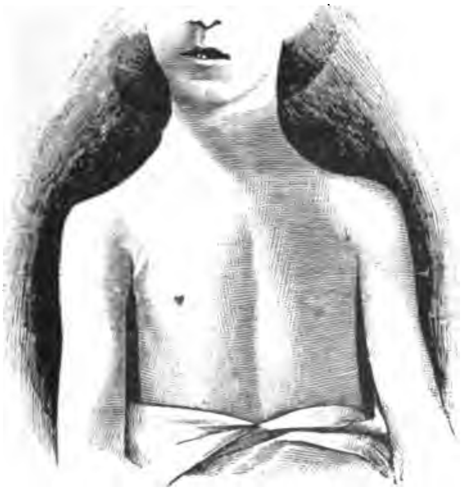

FIG. 5.

"The third variety of thoracic deformity, the 'flat chest,' is due directly to obstruction by the adenoid growth itself, and is an indrawing of the chest-walls, especially a shortening of the antero-posterior diameter, which results from an insufficient air-supply of the lungs. The chest becomes flat and thin (Fig. 5), has a sunken appearance over the lower part of the sternum, perhaps a deep concavity at the ensiform cartilage, with depressed intercostal spaces.

"Rachitis, so often associated with depraved nutrition, is doubtless the predisposing condition to all of these forms of chest deformity."

The author does not state whether the deformed teeth, dental arch, alveolar process, vault, turbinated bones, vomer and flat chest, as illustrated, all belong to the individual whose picture is here produced, but such a deformed face naturally leads to the expectation that there will be found all of the conditions present. These deformities, and many more, are often associated in such individuals. The author does not mention that the left side of the cranium and the left face, eye and ear are lower than the right, and that there is a marked arrest of development of the superior maxilla. He claims that the conditions illustrated in his article are due to adenoid vegetation. This is stated dogmatically, and for that cause alone, were there no contradictory facts, would merit criticism, for the following reasons:

That the hanging lower jaw is produced by adenoid vegetation or obstruction to the nares, so that the patient is unable to breathe through the nose, as the author says, is true. The alæ of the nose, however, are in most cases not distended, but this is owing to the arrest of development of the bones of the nose.

Again, he says, "The air cavities in communication with the nose, as the frontal, maxillary, sphenoidal and ethmoidal sinuses, which are essential to the proper expansion of their respective bones, cease to develop when the circulation of air through the nose is interfered with, thus altering nature's intent regarding the dimensions of the face and head."

In cases such as are illustrated in Fig. 1, these sinuses never develop; they become arrested at the same time as the bones of the nose, face and chest. It is quite questionable what "nature's intent" in these sinuses is, since in many skulls some are wanting, others small or large, and yet others unequally developed. The abnormal development of these sinuses, as illustrated in Figs. 57, 82, 84, 85, 86, of Bosworth's work upon "Diseases of the Nose and Throat," demonstrates that it is impossible that the mere circulation of air, without pressure, in these cavities, should develop the growth of the bones of the skull and influence their size. These abnormal conditions are always present in neurotics and degenerates. It has been proven many times that mouth-breathing does not contract the dental arches, and consequently the vault. In the first place, there is no pressure upon the dental arches, which can be demonstrated by opening the mouth and placing the finger upon the buccinator muscles.

Again, if it were possible, the contraction would not take place in the anterior part of the jaw, since the buccinator muscles extend from the second bicuspid back, and the greater pressure, if it could be exerted, would be at the first permanent molar, where nature requires it to be, to carry and hold food under these teeth for mastication.

In a large number of models of jaws of mouth-breathers,* not a single case has been observed like the one illustrated in Fig. 2. If such deformities were the result of mouth-breathing, pressure upon both sides would produce uniform deformity; but this is never the case.

The author says, "Elevation of the palatal arch lessens the transverse diameter of the jaw, and causes it to grow pointed in front." To a dentist, comment is unnecessary, since, on general principles, it is hardly necessary to say that a lesser force cannot overcome a greater—the so-called V-shaped denture—and "with the resulting contraction of the alveolar process, the teeth, especially those near the point, are crowded into various grotesque aggregations, or are rotated on the axes, a condition depicted in Fig. 2, drawn from a typical case." * * * In a dental practice embracing thousands of such teeth, there was never seen a single instance in which the teeth were shaped as illustrated in the diagram. So far as that is concerned, the teeth are not crowded. To be sure, the centrals lap, but the next two teeth, the laterals, do not come in contact with them, nor do any of the other teeth touch. Hence, the theory of the author that in this particular case the contraction is due to pressure of the buccinator muscles as a result of mouth-breathing, does not hold good, since contraction from external causes must bring the teeth into contact. On examining the model, very little can be learned, so far as the teeth are concerned, on account of the poor drawing. Note the space, and also that there is no room for the second and third molars.

The anterior contraction there is not due to external force, or to the eruption of the posterior teeth, since there are none, there being empty spaces in their places. There is, however, hypertrophy of the gums and alveolar process, which has formed after the development of the normal vault. The deposition of bone cells in the alveolar process has moved the teeth apart, and rotated them; and this, with the development of the cuspids (which tend to erupt toward the median line), has produced contraction of the anterior alveolar process. Similar cases may be observed in all dental works.† Hypertrophy of the gums and alveolar process, and missing teeth, are quite common in neurotics and degenerates, especially epileptics.

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*Etiology of Osseous Deformities of the Head, Face, Jaws and Teeth.

†See Figs. 26, 27, 118, 119, Etiology of Osseous Deformities of the Head, Face, Jaws and Teeth.

Figure 3 is evidently diagramatic, because such a flat vault in so narrow a space between bicuspids could hardly exist. In an examination of 4,614 normal jaws (in which the teeth were all regular), the lowest vault was .21 from a line drawn across the alveolar process between the second bicuspids and the first permanent molars, while the highest was .84, with an average of .58 (measurement in decimals of an inch).

In deformed jaws (in which the teeth were irregular), in 44 cases of saddle-shaped arches, there was an average of .60 of an inch in V-shape; like the case under discussion, .55 of an inch; and in semi-V and semi-saddle-shaped arches, an average of .56 of an inch. In other words, in deformities of the dental arches, the vaults are not higher than in normal dental arches, but they have that appearance because of the narrowness of the dental arch.

Again, the author says, "Next, elevation of the palatal arch must produce contortion within the nose." Speaking of the septum, he says, "Designed by nature to fill vertically the natural space between the roof of the nose and its floor, the abbreviation of this space by elevation of the palatal arch through the instrumentality of naso-pharyngeal adenoid hypertrophy cannot result otherwise than in forcing the septum to provide for itself by bending and curving laterally in various directions," a condition which is diagramatically represented in Fig. 4. If "elevation of the palatal arch must produce contortion within the nose," how does the author account for the contortion of the bones of the nose where there is no elevation of the palate? The worst forms of deflected septum and hypertrophy of the turbinated bones that have come under observation in the examination of 20,000 skulls, were in those of ancient Hawaiians, Peruvians, Alaska and Vancouver Indians, whose dental arches are very large, the teeth even, and the vaults exceedingly low. These may be tested in the Peabody Museum, Cambridge, Mass., and the Army Medical Museum, Washington, D. C. How does the author account for instances in which the two halves of the vomer separated, sometimes through their entire length, or only a short distance, occasionally one half becoming fractured partially or wholly?

Figure 4 gives a fair illustration of the deformities of the vomer and turbinated bones. To make it a typical diagram, however, the right inferior turbinated bone should be situated lower down, and the convex surface of the vomer should be midway between the two turbinated bones. The vomer, however, is frequently deflected in the middle portion, again in the anterior portion, and still again in the posterior part of the bone. The other parts being normal, some other cause for the deflection than high vaults must therefore be found.

Since the turbinated bones are abnormal in their development as regards size, and also in position, it would be logical to suppose that the thin, uncalcified or slightly calcified septum (because it is sometimes found bent or broken, and again, the two halves separated, or occasionally one half broken), would bend or twist like the sails of a vessel, the upper and lower border being attached its entire length.

Most deformities of the vomer depend upon the position, shape and size of the turbinated bones. The inhalation and exhalation of air causes the vomer to take its shape and contour from the position and development of these bones. Aspiration and spasmodic action in breathing in the child, when there is inflammation of the mucous membrane, takes place as a result of cold, usually causing such spasmodic action by the frantic efforts of the child to take air into the lungs. The vomer is sucked into the space between the turbinated bones, and if calcification has wholly or partially taken place, fracture at that point results.

The action of air in inhalation and exhalation upon the sides of the vomer tends to produce a stimulating effect, and a healthy physiological lengthening takes place. The separation and fracture of one half, and the ultimate ossification between the two halves and at the point of fracture, can also be accounted for in the same manner.

The "three varieties of thoracic deformity," the author says, "are observed to accompany obstructive naso-pharyngeal adenoid hypertrophy," but "the third variety of thoracic deformity, the flat chest," Fig. 5, "is due directly to obstruction by adenoid growth itself, and is the drawing-in of the chest walls, especially a shortening of the anterio-posterior diameter, which results from an insufficient air-supply to the lungs." Did it not occur to the author that the patient would inhale sufficient air to oxygenate the blood, regardless of "the obstruction," by breathing through the mouth? Hence another cause must be found for this chest deformity, and one that will not only cover the three varieties, but also all the deformities spoken of in this article, since it is evident that one is not dependent upon the other.

An individual possessing the deformities of the head and face illustrated in Fig. 1, is apt to be deformed in any or all of the organs of the body. Such being the case, it can be accounted for only in one way, and that is, a disturbance in the nutrition of the person at the time of development. These abnormal conditions, if not marked at birth, are not noticed until after the sixth or seventh year, or until the organ has attained its full growth. The brain develops and obtains its growth at the sixth or seventh year, after which the cells that preside over the development of the tissues of the body may become dormant. This may be due to inherited taint, or the result of constitutional disease, such as scarlet fever, measles, typhoid fever, etc., very early in life. Affections of the eye, deformities of the nose, face, vault, jaws and teeth, and arrest of development of the chest, are nearly always associated with neuroses and degeneracy, since fully fifty per cent. of the population exhibit to a greater or less degree the stigmata of these two conditions.

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ELECTROZONE.

BY C. F. W. BÖDECKER, D. D. S., M. D. S., NEW YORK CITY.

Since all purulent inflammatory processes depend upon an infection of the inflamed tissue with staphylococci and streptococci, it is evident that, by the early application of a proper antiseptic agent, we may prevent the formation of an abscess. Most of the antiseptics, however, which will destroy micro-organisms, are powerful irritants, and will, therefore, disintegrate the tissues to which they are applied, in consequence of which their employment is not always advisable. In dental practice, our principal aim should be to prevent infection with micro-organisms, although in the mouth this is possible only by exercising great care. The oral cavity always contains innumerable bacteria, although the majority of them are inert so long as they remain on the surface of a tissue covered by healthy epithileum. If a single one of these micro-organisms obtains entrance into the depth of the tissue, which, at the time, is in the stage of non-purulent inflammation, an abscess is the result. Such infections easily occur after wounding the mucous membrane of the mouth, as well as in consequence of gangrene of the pulp. In both instances, however, by the timely employment of proper antiseptics, we may be able to prevent a purulent inflammation, although it is a fact that most of the antiseptics in common use are ineffective in accomplishing this result. The writer has, however, lately made use of a new preparation called "Electrozone," which, so far as his experience reaches, has given uniformly satisfactory results. This fluid, which is nothing but sea or salt water that has been subjected to an electrolytic current, is an admirable antiseptic. It is a clear liquid, neutral in reaction, smelling somewhat of free chlorine, and has a rather disagreeable, salty taste. It is the discovery of A. E. Woolf, who has been successful in sterilizing polluted water with it on a large scale.

It is well known that one of the most difficult problems submitted to the sanitarian has been the disinfection of the sewage of large cities, when this has been found necessary for the prevention of zymotic diseases. Through the action of the New York municipal authorities lately, such a case, of much more than usual proportions, was presented. They had purchased for the city, about two years ago, Ricker's Island, in the East

River, and it was determined to extend it and to fill in certain low portions of it; so a crib-work of piles and broken stone was built, projecting toward the channel frequented by craft proceeding to or coming from Long Island Sound, and thus a vast inner space was gained from the water, which was to be filled in.

The garbage of New York was at this time disposed of by loading it into scows and then towing them far enough out to sea to prevent too great pollution and filling up of the harbor, and there it was dumped. The commissioners thought to exercise a little prudent economy, and so ordered the garbage dumped into the Ricker's Island extension, and rejoiced at the thought that thus they might kill two, perhaps three, birds with one stone. They would fill up the yawning gulf, would save the towing of the scows out into the cold, uncomfortable sea, and possibly save some money.

New York furnished over 8,000 cubic yards of choice garbage every day, consisting of ashes, about 30 per cent.; paper, 20 per cent.; street sweepings, 20 per cent.; kitchen refuse, 20 per cent.; and wood refuse, 10 per cent. By midsummer, over 1,000,000 cubic yards of this stuff had accumulated within the crib-work. During the succeeding cold weather this did not give much annoyance, but by the succeeding June, the whole mass was in a condition that can be better imagined than described. Fermentation had gone so far that at many points smoke arose continually, and an egg could be cooked anywhere a few inches beneath the surface. The stench was simply infernal. It was nauseating three miles away on the open Sound, while residents at College Point, nearly two miles away, became fairly mutinous. The dumping of the garbage was stopped, but there was a nice kettle of fish already cooked, and the problem was, what to do with thirty acres of seething refuse, ten or twelve feet high and of varying depth. Pools of black sludge, the odor of which combined all the bad smells of Tartarus itself, were visible all over the addition. It was simply impossible to keep the brass and other metal work of the steamers plying in the vicinity from turning black, and every inhabited place near by was threatened with pestilence.

At this juncture, Mr. Woolf undertook the Herculean task of cleansing this Augean stable. He prepared and placed in position apparatus for making electrozone in large quantities from the sea-water. The barges, fitted up with the necessary machinery for converting the chlorides and bromides of the sea-water into hypochlorites and hypobromides through the action of electricity, were towed to the spot, and the electrozone was, by means of hose, sprinkled upon the seething mass. *The Electrical Engineer* says, concerning the result:

"The task of reducing Ricker's Island to a sanitary condition began on June 29th last, when, urged forward by the anxious authorities, a barge was run alongside the crib, on which was installed a modest electrozone plant capable of delivering about 4,000 gallons per hour of that liquid. All around, the river waters were black and noxious, the tides doing little to improve things. But Mr. Woolf, imitating the Bismarckian policy of frying Paris in its own fat, took that water into his tanks to be purified and showered back on the stinking, smoking, fermenting mass from which it slowly oozed. * * * There is no question of the fact that over the surface of the whole thirty acres, in a brief three weeks' time, Mr. Woolf has brought death to every foul germ, gas and odor, and that the work of purifying infiltration is steadily and successfully going on. One feature of the task was the extraordinarily quick action of the liquid on the stagnant, stygian pools that had formed inside the crib, beyond the lines of dumping. One such pocket of recent formation lay effervescing under the fierce sun. A line of hose was run out to the place, and in a few seconds the evil-looking scum was gone forever. In ten or fifteen minutes the vile odor was sensibly diminished, and that pool, in the very heart of the green island, was soon infinitely sweeter than the ordinary city sewers."

The results were quite as satisfactory as they had been in the use of electrozone at Brewster's, N. Y., whose sewage drained into a marsh, from which a part of the New York City water supply was derived. In this instance, electrozone was sprayed into the brook at the rate of 1 part of the contained hypochlorite to 100,000 parts of water. Dr. E. A. Martin, Chemist of the Health Department, reported that analysis showed that the relative number of bacteria per cubic centimeter in different samples taken before and after treatment was as follows:

Before Treatment.	After Treatment.
32,600	8
22,000	42
2,353	12
4,134	0
7,000	0

From the above statements, which my limited experience corroborates, we have to admit that electrozone is the most powerful antiseptic known without being poisonous. The writer has used it in his daily practice since last March, with surprisingly good results. As a mouth-wash, and wherever a strong antiseptic action is required, it has no equal. Of greater importance, however, is the prompt sterilization of septic matter in gangrenous and purulent pulpitis. In most instances, pericementitis follows the removal of remnants of the pulp when in a gangrenous or purulent inflammatory condition, or the removal of septic material from the pulp canal.

The cause for such an infection of the pericementum is evident. If a nerve broach be introduced into a pulp canal, the entrance to which is filled with micro-organisms, the broach will carry some of them along to or through the apical foramen of the root, even though portions of the pulp be alive at the time of extirpation. Bacteria are organisms so minute that they can only be detected by the aid of the microscope, with a magnifying power of at least 600 diameters. Every human mouth is crowded with them, and during operations, our fingers, instruments, and everything with which they come in contact, are infected with micro-organisms. In this manner, nerve instruments, although they may have been previously sterilized, if they are afterward permitted to come in contact with our fingers, the handles of instruments, napkins, towels, etc., which have been touched by our fingers during an operation, may infect the pericementum. Thus it becomes explicable how micro-organisms may obtain entrance to the pericementum, even though ordinary care may have been used. The question then arises, Can we obviate an infection of the pericementum? This certainly is possible, if great care and judgment are exercised.

The writer's method is as follows: In a case of purulent pulpitis, partial or total gangrene of the pulp, the diagnosis of which should be fully clear, the pulp chamber should be opened freely, which usually will instantly relieve the pain. The pulp chamber of the tooth should then be syringed out with tepid water, to which has been added some electrozone. A small piece of cotton, saturated with pure electrozone, is then introduced into the pulp chamber, followed by one or two larger pledgets, also moistened with electrozone. The patient is then directed to renew only the last piece of cotton, from three to five times daily, or at least after every meal, using the precaution to rinse the mouth with a weak solution of electrozone (about a teaspoonful to a tumbler of water) previous to the removal of the cotton. Every pledget of cotton, previous to its introduction, should be moistened with pure electrozone, and packed as tight in the cavity of the tooth as possible. When the tooth has been treated in this manner for two or three days, the pulp canal may be cleaned out and filled at once, without any fear of future pericementitis, provided that an infection of the pericementum has not already occurred.

To clean out and fill a pulp canal successfully, the rubber dam should be applied, and when in position be moistened with pure electrozone. The hands should then be thoroughly washed again, and also disinfected with the same agent. All the instruments to be used should be immersed in pure electrozone. The tooth to be treated is carefully cleaned with a piece of cotton moistened in the same antiseptic, after which the cotton may be removed from the pulp chamber of the tooth. If little of the pulp is found to be alive, this may be extirpated at once, without much pain, by means of a fine nerve drill, rapidly revolving in the hand-piece of the dental engine. Previous to the introduction of any instrument into the pulp canal, the latter should be flooded with pure electrozone, and no air should be allowed to enter the pulp canal after the extirpation of the pulp, until it has been thoroughly disinfected. The canal may then at once be filled with safety, and if the filling material has been made sterile, and is not pushed through the apical foramen of the root, the tooth will give no further trouble.

As a mouth-wash, the writer has made use of the antiseptic with gratifying results, although, on account of its disagreeable taste, it is objectionable to some patients. If, however, it is diluted with water, ten to twenty volumes, its taste is not so obnoxious, and in such dilutions Dr. E. A. Martin pronounces it still the most powerful antiseptic known. The writer has made use of it in such diluted form in the treatment of empyema of the antrum, necrosis of the jawbones, alveolar cysts, and pyorrhœa alveolaris, with similar good results.

PROTRUSION OF THE UPPER JAW.

BY R. OTTOLENGUI, M. D. S., NEW YORK CITY.

Time was, and not so very long ago, when an expert in the regulation of teeth might expect to have nearly all classes of irregularities referred to him by his brother dentists. With the advance of time and an increased knowledge of the technics of the subject, more men have essayed to regulate the teeth of their patients. At first they treated simpler cases, where the tortion of a single tooth, or the reduction of two or more to their proper places within the arch, offered few obstacles to success. But, gaining courage with experience, the general practitioner has widened the sphere of his endeavors, until the specialist nowadays receives from him only those very difficult cases, which with all his increased knowledge he dreads to undertake.

It is interesting to inquire into the nature of these deformities, so extreme in character that really expert men send them elsewhere, and yet which can be corrected, since the specialist accepts and treats them. I should divide them into two classes, the first of which would include unique and excessive departures from the normal mould, and the second, merely protrusion of the upper or lower jaw.

Thus it may be held as true, that, not considering the most horrible freaks of nature, and dealing exclusively with such deformities as may be classified into groups because of their frequent occurrence, protrusion of one of the jaws is the condition which at present marks the limitation of the skill of the general practitioner.

When the specialist receives a letter from a dentist, perhaps a thousand miles distant, stating that he has sent a patient, it would be reasonable to wager ten to one that the case, when presented, will prove to be a protrusion, and ninety per cent. of all such, fortunately, will be of the upper jaw. For these reasons have I chosen this class as one that may well be dealt with apart from the general subject of irregularities.

Before beginning any discussion of the methods of treatment, let me say a word about etiology. There are some who find it profitable to spend much time and labor upon speculations as to the why or the wherefore of this, that, or the other aberration. They try to find causes for every twist or prominence that departs from the normal type. To me this seems labor lost, or almost lost. Of course it would be interesting to know positively why Master Jackie's upper jaw protrudes, when his brother Johnnie has a perfect arch and occlusion, and his sister Sue, *per contra*, protrudes the lower jaw, notwithstanding the fact that all three have the same mother, and presumably the same father. I say it would be interesting, but out of all the mass of theorizing that has helped to pad out our journals and text books, what single fact in this connection has yet been proven — proven beyond dispute, I mean; proven so that it has been accepted as a final doctrine, forever?

And then, to view this from another aspect, what difference does it all make to Jackie? He wants his protruding upper jaw retreated — that is what he wants. His sister Sue wants the same thing done to her lower jaw. Little Johnnie, lucky boy, snaps his fingers at the whole crew of etiologists, and says: "I'm the same as Jackie and Sis, so far as my etiology goes, but my teeth are all right, thank you!" But these two children, with their crooked jaws and distorted features, are in our hands for assistance. Suppose the etiologist really solves the problem of cause, mixed and muddled as it is; does that aid the dentist one jot in his work? Is his treatment and management of the case to be affected in any way by what the etiologist tells him? I think not. I would take Jackie's case without inquiry into his previous history; without caring whether he sucked his thumbs or his mother's breast too long; without knowing, or wishing to know, whether he had a great aunt, five degrees removed, who sucked her thumbs and protruded her jaw. All such considerations are worthless when one comes to the practical task of correcting the deformity.

The one argument that might be made is that if the case is what has been termed congenital, it will be more resistant; that is, that there will be an unusual effort made toward a return to the irregularity, indicating a longer necessity for the retaining fixture.

But even in this connection we do not need the etiologist to teach us what we must do, and I even doubt whether the character of the cause of the irregularity has anything whatever to do with the undoubted fact that the retaining fixture must be persistently worn. This will be true whether the case be congenital or not. I may consider this point as well here as elsewhere.

Suppose for a moment that a girl presents, with the four superior incisor teeth biting *within* the lower arch. Suppose, if you like, that her sister, her brother, her father, her mother and her mother's mother all have, or have had, the same abnormality. That would be a perfect case for your etiologist, and the claim of congenital aberration would perhaps be well founded. Then it should follow here as elsewhere that if regulated there would be a great effort to return to the irregular position. But suppose that these four incisors be regulated so that they bite properly, *outside* the lower arch, will they return? Certainly not. Provided that they do bite well over and outside of the lower arch, no retaining fixture will be required at all, after a reasonable period has been allowed for the fixation of the teeth in their sockets. Why? Because the lock of the new, but normal occlusion, tends to hold them out. Also because the act of incising food tends to protrude the upper teeth, if it affects them at all.

With a protruding arch, which has been retracted, it is quite otherwise. The teeth forcibly carried backward, finally impinge upon the lower teeth, as in the other case, but now the latter can have no influence restraining them from returning to their former places. It may be that the alveolus has been crushed together, rather than absorbed, and, acting like a compressed sponge, tries to expand again, in this way carrying the teeth forward once more. And here, certainly, and what is most important, the new bone formed may well be inadequate to hold the teeth. In the movement *outward*, new bone formed *behind* the teeth is solidly re-enforced by the entire jaw back of it, thus acting as a permanent restraint to the return. But where the teeth are *retreated*, the solid part of the bone is either compressed or absorbed to allow the movement, and the labial part of the alveolus goes in with the teeth. This labial bone cannot act as a restraining cage to the teeth, until it has been firmly knitted to the palatal part of the socket by a solidification of that which fills the spaces between the roots. Now the whole alveolar bony tissue is exceedingly spongy and soft until quite beyond the age at which we usually regulate teeth. Therefore, regardless of congenital circumstances, it will usually be necessary to hold the teeth in place for an indefinite period. Again, the incising of food during mastication, if anything, must work against their retention rather than otherwise.

How then shall we decide when it may be safe to remove the retainer? It is usually my custom to instruct the patient to wear the restraining cage or band for one year, night and day. In some cases I make a cage which is cemented on for a period of three months, that the solidification of the bone around the teeth may be more thoroughly accomplished. Then substitute a removable fixture. At the end of a year, or earlier, at the discretion of the operator, the restrainer may be worn at night only, and during meals, the orders being that if at any time it should be found difficult to replace, (a signification that a forward movement had been initiated) then the restrainer should be again worn continuously. Even after nightly wear during another year, it would be wiser to abandon it on alternate nights than to throw it aside entirely. I have known a case where an instrument was worn in this way for five years, and two years later there is a slight protrusionwhich shows a space at the median line. The cage was abandoned too early in this case, which, by the way, was not congenital, so far as the history shows. To conclude this part of my argument, I have only to say that however valuable the etiology of irregularities may be as a contribution to science, so far, at least, nothing has been proven which in any way known to me facilitates the correction of oral deformities connected with the teeth.

DIAGNOSIS.

In undertaking the care of a prominent superior jaw, the diagnosis is of primary importance. The jaw may be actually prominent, or only apparently so. The fact that the superior incisors overlap the inferior by a quarter of an inch or more, by no means proves that the upper jaw is abnormal. The fault may be in the lower jaw entirely. To decide this point, the countenance should be considered by examing the profile, with the lips at rest. At once it may be noticed that in this pose the lips do not meet, the teeth showing between. If the upper lip be short, arched upward, and the upper teeth taking a similar direction, correction may be confined to the upper jaw. If the lower lip curl inward, hiding the lower teeth, which also incline toward the tongue, the abnormality may be exclusively in the lower incisive region. Before opening the mouth to examine the teeth, note whether the distortion of the features depends upon a prominent superior maxilla, which in extreme cases may even make the nose itself appear turned up. Also observe whether the whole chin seems to be retreating, so that the facial contour would be perfected by moving it forward. If the chin seems to recede, have the patient slide it slowly forward, without opening the mouth, and at various points decide where it should rest in order to effect the most æsthetic results.

During this examination, it may be found that—

(*a*) The frontal alveolus of the superior maxilla is too prominent; the lower jaw is in a normal pose. Treatment indicated is a reduction of the frontal prominence of the upper jaw, without interference with the lower.

(*b*) Superior frontal prominence and inferior frontal recession, confined in both instances to the alveolar process. Treatment: Reduction of upper prominence, and forward movement of lower incisive region.

(*c*) Superior maxilla normal; inferior incisive region retreating. Treatment: Correction of the deformity of lower incisive region.

(*d*) Frontal prominence in the upper jaw, combined with a narrowing in the bicuspid region; lower jaw normal. (This, however, would be unusual, as a narrowing of the superior jaw across the bicuspid region usually accompanies a narrowing of the lower jaw similarly, with a crowding in the incisive region. This because however irregular the teeth, we commonly find an attempt at occlusion.) The treatment indicated is to widen the jaw (or jaws) and reduce the prominence, the first making the second possible.

(*e*) A frontal prominence of the upper jaw; lower jaw normal, so far as the shape of the dental arch and the pose of the teeth are concerned, but the entire set of teeth occluding one-half tooth or more posterior to a typical occlusion. Treatment necessitates a reduction of the prominence and a correction of the false occlusion, with restoration to proper facial contour, by "jumping the bite."

(*f*) Superior and inferior arches both normally regular, but an apparent superior prominence, which is really an inferior recession, caused by a false occlusion of the jaws, the lower biting back of the typical occlusion. Treatment: Entire restoration of contour and correction of false occlusion by "jumping the bite."

Modes of Treatment.

In briefly outlining the management of the above-described cases, I desire to state that after giving due attention and study, as well as trial, to the various methods suggested by others, involving spring pressure, tension by screws, etc., I am convinced that the best force is that obtained from the elastic band skillfully and wisely applied. There is no class of cases which more urgently demands that the work should be accomplished as rapidly as is consistent with safety. I need to look no further for an argument against the methods which I deprecate, than an examination of the dates on the models which their advocates exhibit at dental meetings and clinics. By counting the elapsed time from the beginning to the conclusion of these cases, I almost invariably find that from two to even ten months more than necessary have been consumed. A case which I saw at a meeting once, exhibited with much pride by the operator, had occupied from January of one year to February of the next, and it so happened that an exactly similar case, the patients being of the same sex and age, had also been dismissed by us in February, which had only been begun in the latter part of the previous November. It is, therefore, for this reason that I adhere to the old-fashioned rubber band, in preference to the new-fangled notions.

I have no patience with the men who are constantly striving to present new methods, or, as they are prone to term them, "systems," of regulating teeth. These men are more anxious to advocate a "system," which they christen with their own names, than they are to produce the best results for their patients. If there is a plan comprehensive and simple, which accomplishes a purpose satisfactorily in three months, there is no value whatever to a new system, however ingenious theoretically, and however beautiful on paper, if it requires double the time in practice. Nowhere in the whole realm of dentistry are there more false claims set up than in that department which regulates teeth. It is simply astonishing how many cases which have been regulated by the new systems require re-regulating by the old. I recall especially one young lady who came to us for examination. She wished her teeth filled, but we did not understand at first the purpose of her visit, and she was advised that her teeth could be regulated, despite the fact that she had come so late in life, being then eighteen. In amazement, she said: "But my teeth have been regulated. Dr. Blank spent a whole year, and my father spent a thousand dollars to have it done. He says they cannot be improved." Yet, in spite of the learned gentlemen's statement, the upper teeth in the incisive region extended beyond the lower three-sixteenths of an inch. Three months later that upper jaw was in perfect occlusion with the lower.

In the first case cited under the caption "diagnosis," the description is, "the frontal alveolus of the superior maxilla is too prominent; the lower jaw is in a normal pose. The treatment indicated is a reduction of the frontal prominence of the upper jaw without interference with the lower." By the last statement is meant, that the lower jaw being in proper pose, both as regards occlusion and outward facial contour, it must not be disturbed, but attention must be exclusively given to the upper jaw.

Having made the general diagnosis which classifies the case, the next step is to make a more minute examination, in order to decide upon the details required in pursuit of the object. It is easy enough to say that treatment involves a reduction of the prominence, but how is this to be done? The chief point to be decided at this point is whether extraction be necessary or not. All of the permanent teeth—of course excepting the wisdom teeth—being in place, the child perhaps fourteen years old, I would think extraction advisable, provided the arch is generally symmetrical and all the teeth in close contact. I wish to be distinctly understood throughout this paper that in each instance the advice given is exclusively applicable to the special conditions indicated. In this case, we have started with the premise that the lower jaw is not to be disturbed, not requiring it. Under these circumstances, I say again, if the upper jaw be generally symmetrical and the teeth in contact throughout, the best and quickest, if not the only way to accomplish our purpose, is to extract two teeth. All things being equal, the choice should fall upon the first bicuspids, the reason for which is this: First, by so doing we have two teeth less to move than were we to extract the second bicuspids; and secondly, by leaving in the first bicuspids we not only add to the resistance of the body to be moved, but we take away from the anchorage of our force. To make this plainer, suppose that the twelfth-year molars are sufficiently advanced to permit an anchorage in the shape of a clasp or band thrown around them. With the first bicuspids out, we have six single-rooted teeth to be moved, and four molars and two bicuspids to serve as resistance to our force. With the second bicuspids out, we have eight teeth to move and only four teeth for resisting force. It might be argued that the teeth could be carried back two at a time, but this method is not only long and tedious, compared to moving all at one time, but it requires constant renewals of fixtures, and in the end, before completion, the long-continued strain will have loosened the anchor teeth, so that even the force required to move the heretofore untouched central incisors, the last in the series, will be more than they can withstand. Then, either we must abandon the work until the anchor teeth become firm, or else some extremely difficult method must be adopted, such as using a head-piece, or banding all the teeth that have been moved, and by thus uniting them obtain (perhaps) sufficient resistance to move the incisors.

Of course, if the patient presents with the first bicuspids sound and healthy, while the second have pulps exposed or are otherwise worthless, that might be sufficient excuse for extracting the second bicuspids. Ordinarily, however, the first bicuspids are the best for the sacrifice. Before leaving this subject of extraction, let me say that if the case presents before the eruption of the canines, even though the correction is not begun at once but must be postponed for some months, it will be eminently wise to extract the first bicuspids. In a case of this nature that passed through my hands I advised such a procedure, and when the case came to be treated a year later the cuspids had erupted quite near to the second bicuspids, and the course of treatment was greatly facilitated and abbreviated on that account.

Immediately upon the extraction of the teeth, except in the instance cited where the cuspids have not erupted and it is inconvenient for the patient to have treatment begun, the fixture should be inserted. Commonly all that will be required is a vulcanite plate, accurately adapted to the roof of the mouth, with clasps around the posterior sides of the second molars, and hooks in the plate opposite the palatal sulci of the same teeth. Another hook appears on the outer end of each clasp. Then a T-band is fitted about the labial surfaces of the six front teeth, and a hook is at each end. The stem of the T passes between the centrals, and also terminates in a hook. From this latter a rubber band is extended to each of the hooks on the plate, and along the buccal side of the teeth an elastic band connects the hook at the end of the arm of the

T with the hook which is on the end of the clasp. With exactly such a fixture I have seen many cases completed within three months, the six front teeth being carried back until the cuspids touched the second bicuspids. Elongation of the incisors during the progress is prevented by little hooks passing over the incisive ends, which also keep the T from pressing up against the gums.

Where the patient is younger and the anchorage to posterior teeth is not strong enough, then the prominence can be reduced by using a leather skull-cap, in connection with a bit which envelopes the teeth to be moved, arms extending out of the mouth for attaching the rubbers to the cap. In this way the back of the head becomes the point of resistance.

But it is not always necessary to extract teeth. The case may present where the teeth are not in contact, the four incisors especially flaring outward and away from each other, so that spaces occur all around. In such a case, the fixture described above will accomplish everything, without extracting, because the teeth, when retreated so that they are in contact, will be found to be in good position. In such a case, if after reduction it is found that the teeth are still slightly in advance of the lower teeth, but that the general effect is good, the deformity having disappeared, then it would be rash and unwise to extract two sound teeth merely for the gratification of carrying the upper teeth back a little more, for in such a case it would be manifestly impossible to reduce the arch until the cuspids touch the bicuspids, and unless this can be done so that the integrity of the arch may be restored, extraction is never advisable. If spaces be left in the arch, disaster is almost sure to follow later in life, by the tipping of the teeth adjacent to the space.

The next condition cited was a combination of a protruding upper jaw and a recession of the lower in the incisive region. Under these circumstances it would so seldom be necessary to remove any teeth that the regulation should be attempted without, and carried to a point where either success was attained or else it became manifest that a perfect result would be had only by extracting. This, because a part of the apparent overhang would be obviated by the forward movement of the lower incisors. These teeth could be brought out to a band, with rubber ligatures, but here if anywhere the spring wire becomes serviceable. It is more difficult properly to manage a band around the lower teeth than around the upper. The band, to afford sufficient resistance, must be sufficiently far from the labial surface of the teeth to cause a stretching of the rubber, and this will not be as readily tolerated by the lower as by the upper lip. Again, it is more difficult to use the rubber ligature on the lower incisors, because they are usually bathed in saliva. With spring wire, whether of steel or gold, the wires are tied to the teeth, their spring being at tension, and thus lying against the teeth they do not fret the lip, while the saliva acts helpfully on the linen ligatures by shrinkage.

In the third condition, the superior jaw being normal and the lower incisors retreating, the correction has to do only with a forward movement of the lower incisors, which would be the same as in the last case.

The fourth condition presents a frontal prominence in the upper jaw, with a lateral narrowing across the bicuspid region. The treatment here is theoretically obvious. Suppose that the arch were a piece of wire bent exactly to conform to the curve of the alveolus; then imagine the ends of the wire fixed; it is evident that if the contracted sides are carried out, the prominent central portion must be correspondingly reduced. In the mouth this movement will not be coincident, because the arch is not a continuous material, but made up of separate teeth, which must be operated upon individually. Nevertheless, the principal is the same. The narrowed sides must be carried outward, thus making it possible to reduce the frontal prominence.

It is very much easier to advise the widening of an arch than it may be to accomplish it. I have heard that it can be accomplished with piano wire bent and attached to a split plate, but that plan has never accomplished enough in my hands to recommend it. Any movement at all was so slow, that in some cases I was unable to afford the time, while in others the very slow action was certain to overcome and prevent my object, as I will explain.

Where the widening required is to be no more than half the width of a bicuspid, which is considerable, a jack-screw and split plate will usually accomplish all that is needed. But even so simple an instrument as this will, not infrequently, demand all the ingenuity of the operator to accomplish the purpose. The most common difficulty will be that the teeth are short, and their palatal surfaces so oblique that as soon as the screw is tightened so as to impinge, the plate is forced out of place, and therefore accomplishes nothing. On the other hand, it sometimes occurs that the bicuspids actually tip inward, offering oblique sides in such a direction that tightening the screw drives the plate up against the gums, so that the membrane will slough before the pressure moves the jaw bone, for it is the alveolar process, and not merely the teeth, that we wish to move.

When the slant of the palatal surfaces is such that the plate is forced out, this is to be overcome in various ways, according to circumstances. Sometimes properly constructed clasps will serve the purpose; or it may be necessary to tie the plate in, a method to be avoided if possible, because of the difficulty in removing and replacing, and because of the damage that may be done to the gums, causing recession, if nothing worse. Sometimes spurs of gold, which project between the teeth far enough to be caught under the "knuckle," will offer sufficient resistance. Another plan is to cement a gold band on a tooth on each side of the mouth, and place projections on the bands at the palatal side, so that the plate rests under them and is so held. Indeed, there are these and many other ways of preventing the plate from leaving its place, but as the choice of either would require an amount of knowledge which would enable the operator to overcome the difficulty himself, I need not describe any other. The truth is, one cannot hope to give dogmatic methods for regulating which will be successful in the hands of all. The man who lacks the ingenuity to construct possibly new contrivances to meet special difficulties, need not hope to succeed in this department.

Where the slant is such that the plate is driven up against the gums too hard, it is to be obviated by a T, extending from each side of the plate, passing between the bicuspids, the arms of the T resting in the sulci of the bicuspids. This offers a resistance to the upward pressure of the plate, and prevents wounding the gums.

But sometimes it will be found that so slight a widening of the arch will not suffice for the reduction of the frontal prominence, and that the alveoli cannot be pressed further out because of the fact that the bicuspids, and perhaps the molars, will slant so badly that they would offer their palatal services for occlusion with the lower teeth. If this result can be anticipated, then the plate for widening the jaw may be properly constructed from the start, and so more readily meet the requirements.

And now I come to the cases in which the slow progress made with piano wire, or springs, defeats the end in view. In order to obtain the needed width, and at the same time retain the bicuspids and molars in their erect position, so that they offer their crowns for occlusion, it becomes advisable to separate the superior maxillæ along the central suture. This is accomplished by a plate, either cut entirely in halves, or else so nearly divided that there is only a slight connection at the posterior margin. The jack-screw is as short as possible, and set as high in the roof as it can be, and the plate itself, or extension thereof, comes forward so as to impinge upon the incisors, a clasp encircling the laterals or the centrals, as may be best. Then the screw is tightened twice a day, until the bones separate. In young patients I have seen this occur within seven days, and two weeks ought to be the extreme of time required. In this way it is evident that as both jaw bones are moved apart, the teeth and their sockets are not disturbed at all, and the pose of the teeth remains the same.

It becomes immediately necessary to insert a very accurately fitting plate, to cover the roof of the mouth, and stiff enough to prevent the return of the jaws to their original position. The opening along the suture rapidly fills with bone, and there is absolutely no ill effects to be anticiarch may then be attempted by use of the ted.

only procedure advised which has not been which has been so much discussed recently, te." A few men, most prominent among the of Chicago, have tried to prove that the oper- They have descanted learnedly about the relation culation, in the compulsory new pose. All sorts of have been advanced to show that the jaw cannot, and a new closure. All this talk undoubtedly will create a nds of those who know nothing about the matter, and never undertaken the operation, are as ready to believe one other. It also serves a satisfactory purpose to those who, made the attempt, have failed, as Dr. Talbot tells us he has, failure on his part as one of the arguments against the possi- This argument really amounts to no more than this, in concise If one man finds that he cannot do it, it must be impossible. of what avail is all this theorizing with those who have tried it have succeeded? When I say that it is possible to "jump the bite," I that it can be done, because I have done it, not once, but many times. And my success is a positive argument in favor of the method, which is much stronger than Dr. Talbot's failure, which serves as a negative sort of proof. If one man actually performs a feat he answers a thousand failures.

As to the method of accomplishing this, it is as follows: The frontal prominence of the superior jaw having been reduced as much as is possible, the lower jaw is moved forward to a good occlusion with the anterior part of the jaws, little consideration being given to the posterior teeth. The lower jaw must not be progressed, however, beyond what becomes a part of the best facial contour, especial observation being given to the pose of the lips, and the relation of the chin to the rest of the features. As soon as it is decided just where it is most desirable to have the lower jaw, a plate is made which snugly fits the roof of the mouth, and which has, at the anterior part, an inclined plane, which not only prevents the closure of the mouth in the old position, but, by catching the tips of the lower teeth, causes them gradually to slide forward in closing, so that the mouth shuts in the desired pose. This plate is worn until the habit becomes fixed, or until the retaining fixture is finally abandoned.

The new bite may become a new habit in two or three months, and I have seen a child adopt it in less time, without the inclined plane, and with nothing whatever to produce the change except an indomitable will power, and sufficient interest in her own welfare for her to second the efforts made in her behalf.

THE MEETINGS AT OLD POINT COMFORT.

THE AMERICAN DENTAL ASSOCIATION.
THE SOUTHERN DENTAL ASSOCIATION.
THE ASSOCIATION OF DENTAL FACULTIES.
THE ASSOCIATION OF DENTAL EXAMINERS.
THE NATIONAL SCHOOL OF DENTAL TECHNICS.

THE AMERICAN DENTAL ASSOCIATION.

The thirty-fourth annual meeting of the American Dental Association convened this year at Old Point Comfort, Va., August 7th. Had it not been for the members of the profession who were in attendance upon the other meetings convened at about the same time, the attendance would have been very light. As it was, in point of numbers it was up to the average, and perhaps a little beyond it. The papers and discussions were, on the whole, below the normal standard, and scarcely of themselves sufficient reward for the time and money necessarily spent on the part of the members. Some business of importance was transacted, and a very few papers of real merit were presented, but the general tone of the meeting was not as high as that of some of its predecessors. The President, Dr. J. D. Patterson, of Kansas City, Mo., proved to be one of the most efficient who ever wielded the gavel of the association. He was dignified and impressive, an excellent parliamentarian, quiet and accurate in his decisions, disciplinary in his methods, and he held the association strictly to the business in hand. He was always clear-headed and never allowed confusion to reign, while there was just enough of arbitrariness in his manner to convince members that he would not be trifled with. Hence business proceeded smoothly, as under the guiding hand of a master.

The Protective Association was one of the first things to come to the front, and at the request of the President, Dr. Crouse, a committee consisting of Drs. H. A. Smith, Louis Jack and C. E. Esterly was appointed to examine the condition of the association, and in conjunction with a similar committee appointed on the part of the Southern Association, to report upon its status. At a later time this committee reported that it had examined the accounts, and found everything in good condition, the affairs being economically administered. The principal part of the money was invested in mortgages and other securities.

The American Dental Society of Europe was known to be in session at Geneva, Switzerland, and upon the motion of Dr. Harlan, of Chicago, the secretary was instructed to send a cable message of greeting to that society.

This year brings with it the fiftieth anniversary of the discovery of anæsthesia, by Dr. Horace Wells, of Hartford, Conn. The Connecticut dentists had already made arrangements for a local celebration of the event, and the Odontological Society of Philadelphia had also passed resolutions concerning it. At the last meeting of the Dental Society of the State of New York, a committee was appointed to act in conjunction with other committees in the endeavor properly to celebrate the event, but nothing had been decided upon. In the last number of this journal, an editorial was published, and advance proofs of it were mailed to all the other editors of dental journals, calling attention to the great significance of the anniversary, the importance from a professional point of view of a national celebration of it, and suggesting the appointment of committees from the various State societies to meet at Old Point Comfort, to take into consideration the best means to make the event what it should be.

Some of the Philadelphia dentists came prepared with a well digested plan, which with some modifications was finally adopted, and this obviated the necessity for the meeting of such committees. Dr. J. D. Thomas, of that city, offered a resolution for the appointment of a committee of nine, to take into consideration and report at the meeting measures for the proper celebration of the discovery by Dr. Horace Wells. The resolution was adopted, and the following named gentlemen appointed: J. D. Thomas, Philadelphia; Thomas Fillebrown, Boston; J. Taft, Cincinnati; James McManus, Hartford; W. H. Morgan, Nashville; W. C. Barrett, Buffalo; A. W. Harlan, Chicago; H. J. McKellops, St. Louis; Thomas E. Weeks, Minneapolis.

This committee met, and Dr. J. D. Thomas presented the proposition of the dentists of Philadelphia, that the celebration should be held there, and should take the form of a dinner, at which certain papers should be presented and addresses made. His proposition was with some changes adopted, and a sub-committee consisting of Drs. Thomas, Barrett and Harlan was appointed to nominate the proper committees.

After due consideration, the Committee on Organization presented to the American Dental Association the following report, which was upon motion accepted:

MR. PRESIDENT AND GENTLEMEN:

Your Committee upon Anæsthesia would report that they have agreed upon the following motions:

First. That the fiftieth anniversary of the discovery of anæsthesia by Horace Wells should be properly celebrated by the dental profession of America.

Second. That the celebration should comprise the presentation of two papers, one upon the "History of the Discovery of Anæsthesia," and the other upon the "Application of Anæsthesia to Surgery and its Benefits to Mankind;" and that Dr. Thomas Fillebrown, of Boston, Mass., be invited to present the paper upon the "History of Anæsthesia," and that Dr. J. E. Garretson, of Philadelphia, Pa., be invited to present the one upon the "Application of Anæsthesia to Surgery."

Third. That a banquet be given in honor of the event, at which prominent gentlemen shall be invited to make addresses, and that the papers and addresses, properly edited, shall be compiled and preserved in a memorial volume appropriate to the importance of the occasion.

Fourth. That after the claims and advantages of the cities of Hartford, Boston, Washington, New York and Philadelphia had been presented and discussed, Philadelphia was unanimously selected as the place of meeting.

Fifth. That there be three committees appointed: an organization committee of nine, an executive committee of eleven, and a general committee of fifty.

The following gentlemen were nominated upon the several committees:

COMMITTEE UPON ORGANIZATION.—J. D. Thomas, Jas. McManus, H. J. McKellops, Thomas Fillebrown, A. W. Harlan, Thomas E. Weeks, J. Taft, W. H. Morgan, W. C. Barrett.

EXECUTIVE COMMITTEE.—J. D. Thomas, E. T. Darby, S. H. Guilford, D. N. McQuillen, E. C. Kirk, Louis Jack, C. N. Peirce, Philadelphia; A. L. Northrop, Wm. Carr, New York; H. B. Noble, Washington, D. C.; Jas. McManus, Hartford, Conn.

GENERAL COMMITTEE.—Dana W. Fellows, Maine; Jas. Lewis, Vt.; J. L. Williams, R. R. Andrews, Mass.; E. S. Gaylord, Conn.; C. A. Brackett, R. I.; S. B. Palmer, S. G. Perry, O. E. Hill, W. W. Walker, New York; R. M. Sanger, C. A. Meeker, N. J.; C. R. Jefferis, Del.; J. A. Libbey, W. H. Fundenberg, Penn.; B. Holly Smith, M. W. Foster, Md.; J. H. Moore, Va.; V. E. Turner, N. C.; T. T. Moore, S. C.; J. H. Coyle, B. H. Catching, Ga.; C. P. Robinson, Ala.; Geo. B. Clements, Miss.; G. J. Friedrichs, La.; W. R. Clifton, Tex.; A. H. Fuller, J. D. Patterson, Mo.; A. O. Hunt, Iowa; C. M. Bailey, Minn.; T. W. Brophy, G. V. Black, G. H. Cushing, Ill.; S. B. Brown, Ind.; J. S. Cassidy, F. Peaboby, Ky.; J. Y. Crawford, H. E. Beach, Tenn.; G. L. Field, Mich.; H. A. Smith, C. R. Butler, A. F. Emminger, Ohio; A. H. Thompson, Kan.; A. W. Nason, Neb.; G. H. McCausey, Wis.; W. J. Younger, C. L. Goddard, E. L. Townsend, Cal.; Geo. H. Chance, Oregon; W. E. Burkhart, Washington.

Dr. McManus called the attention of the association to an article in the *Century Magazine*, for August, which, while pretending to give a history of the discovery of anæsthesia, completely ignored Dr. Wells, and against the recorded verdict of the world gave the credit to another. Dr. McManus severely criticised the publication of such an article as falsifying history, and that its malign and misleading influence might, as far as was in our power, be counteracted, he offered for readoption the original resolutions passed by the American Dental Association in 1864, giving, after due investigation, the credit to Dr. Horace Wells. The resolutions were finally modified somewhat, and unanimously adopted as follows:

WHEREAS, Papers printed in the magazines of the day are calculated to mislead the public as to the facts in regard to the discovery of anæsthesia;

Resolved, That the American Dental Association places itself on record, as it did in 1864, by affirming that the late Dr. Horace Wells, of Hartford, Conn., is entitled to the honor and credit of the discovery. The justice of Dr. Wells' claim was established by an official investigation before a committee of Congress. The testimony taken at this investigation is printed in a work on "Modern Anæsthesia," published in 1859 and 1867 by the late Hon. Truman Smith, United States Senator from Connecticut.

The annual address of the President was presented, in which, after a brief review of the history of the association, and a reference to those who had passed away, he proceeded to call attention to some of its needs, and made several suggestions which he deemed, if complied with, would result in material benefit. The address was on motion referred to a special committee, with directions to report upon the suggestions contained in it. At a later session the committee reported substantially as follows:

First. They recommended the establishment of clinics in both the operative and prosthetic departments.

The items being upon motion considered separately, Dr. Smith, of Florida, urged the adoption of this one, because it was often absolutely impossible perfectly to comprehend any process from its mere description. When it is practically demonstrated, it can be more readily grasped, and all the details may be mastered.

Dr. Welch, of New Jersey, believed that the reason why clinics have fallen into disrepute is because they are so conducted that but a favored few can see what is being done. A number are going on in different corners of the room, and one cannot take them all in. They should be given on a platform, in such a way that all can see.

Dr. Harlan, of Illinois, said that the establishment of clinics would be the death of all scientific discussion in the meeting. If they were to be given, they should be held after the other business of the meeting was over — on the succeeding Saturday, perhaps. But in his opinion there should be one society in the land that could get along without them. They properly belong to local societies, where the number in attendance is smaller. The American Dental Association is not a kindergarten, where elementary principles are to be demonstrated, but an assemblage of advanced minds, capable of considering abstract principles.

Dr. Peirce, of Pennsylvania, said that the clinics of this association had not been abandoned without due consideration, and he thought it would be a mistake to re-establish them. On motion the subject was laid on the table indefinitely.

The second recommendation made by the committee was, that the registration without further examination of the certificates of registered dentists moving from one State to another is impracticable, so long as the various State Boards of Examiners are chosen in different ways, some by the voice of the profession through the State societies, others being appointed by the Governor, and thus always liable to the charge of being political bodies. Upon motion of Dr. Smith, of Maryland, a committee of three was appointed to confer with similar committees from other associations in the endeavor to unify the dental laws of the several States, especially with regard to registration. Drs. B. Holly Smith, A.W. Harlan and J. Y. Crawford were appointed members of such committee.

The third recommendation from the committee was that the chairmen of the different sections of the association be instructed to urge that every member of his section shall, at each annual meeting, present some idea in writing, even though it be brief. On motion this was adopted.

The fourth suggestion from the committee was that the plan of having the business of the association transacted by the Executive Council, as recommended by the President, would work an injury, from the fact that the association would be charged with being in the control of a few men, and that it would foster the formation of rings and cliques, the Executive Council thus being made an irresponsible body. The consideration of this suggestion was, on motion of Dr. Patterson, postponed until the time for the report of the Committee on the Revision of the Constitution.

This committee was appointed three years ago, and they had made a full report, which was ordered printed in the minutes, and may be found embodied in the transactions for 1892. Action was postponed until last year, when the association practically held no meeting. A special session for Thursday afternoon was this year called, when, as there was a proposition made to consolidate the American and the Southern Associations, it was moved that the report be postponed yet another year, and this was carried.

The announcement was made that a National School of Technics had been organized, with ten schools as charter members.

In the evening, Dr. Marshall, treasurer of the Columbian Dental Congress, announced a deficiency, and called for subscriptions to make up the amount. He subsequently stated that a considerable portion of this had been pledged, with a prospect that the whole would be subscribed.

Section I., Prosthetic Dentistry, Chemistry and Metallurgy, made its report, at the close of which Dr. Sharp, of Binghamton, N. Y., exhibited a dental furnace intended for laboratory purposes, especially for porcelain and aluminum work. The furnace was generally commended, but it rather took the breath away from some of the older members to see such an invasion of established precedents in the association, it having been in the past a rather established principle that no apparatus which was on sale should be exhibited in open session. The rule had, however, been infringed before, notably at the last Saratoga meeting, but it had not been at the recommendation of the chairman of a section.

The subject of crown and bridge work was introduced and discussed at considerable length, with about the usual results.

The other sections reported in due time, but with few exceptions there was little of very great interest.

In Section VI. there was a long discussion upon pyorrhœa, and a committee of five was appointed to make observations and investigations, authority being given to draw upon the treasury for any necessary expenditures.

Dr. Palmer read an interesting paper upon the "Etiology of Dental Caries," which was discussed at some length, without any very definite conclusion being reached.

Perhaps the most notable paper was presented in Section VII., by the chairman, Dr. T. W. Brophy, of Illinois, describing a new operation for the resection of the inferior maxillary nerve. Different methods have been pursued by surgeons in this operation, some recommending the opening of the bone until the canal was reached, others drawing the nerve out as far as possible at the inferior dental foramen and excising it, while yet others have proposed to cut down at the sigmoid notch until the foramen was reached, to facilitate the operation. Dr. Brophy's operation consists in enlarging the mental foramen until its opening is in line with the canal in the body of the inferior maxillary, when an exaggerated Donaldson broach is thrust in and revolved, thus severing the nerve, when it is drawn out precisely as the contents of a pulp canal are extirpated. In this way the whole nerve as far back as the inferior dental foramen may be removed without cutting the facial tissues sufficiently to cause a scar, and in the briefest possible time. The simplicity of the operation commends it to all, and the wonder was expressed that none of the surgeons of the world had previously discovered it.

Prof. Brophy exhibited a bisected inferior maxilla, showing the practicability of the operation, with the instruments which he had devised for accomplishing it. He had himself performed it with the happiest results.

Asbury Park, New Jersey, was selected as the next place of meeting, and Dr. J. Y. Crawford, of Nashville, Tenn., was elected President. The other officers elected were Dr. S. C. G. Watkins, first vice-president; Dr. Thomas Fillebrown, second vice-president; Dr. Geo. H. Cushing, recording secretary; Dr. Emma Eames Chase, corresponding secretary; Dr. Henry W. Morgan, treasurer. Four members of the Executive Committee were chosen, including one to fill the vacancy caused by the death of Dr. Geo. W. McElhany. The members so elected were Drs. C. N. Peirce, H. A. Smith, T. S. Waters and Louis Ottofy.

The association then adjourned to meet at Asbury Park, on the first Tuesday in 1895.

THE SOUTHERN DENTAL ASSOCIATION.

TWENTY-SIXTH ANNUAL MEETING.

The twenty-sixth annual meeting of this body was held at Old Point Comfort, Virginia, beginning Thursday, August 2d. The Association was called to order by the President, Dr. B. Holly Smith, of Baltimore, who proved to be a very efficient presiding officer. He was courteous, but firm, and business was transacted with despatch and without confusion. An address of welcome was made by Dr. E. P. Beadles, on the part of the Virginia State Dental Association, which had but just adjourned. This was followed by the annual address of the President, in which he alluded to the value of such gatherings, their educational influence, which might be enhanced by more careful and thorough digestion of the principles to be discussed by the various committees. Each year nearly the same questions were debated without ever arriving at a definite conclusion. Some of these should be authoritatively decided, and thus settled forever. One of them was the whole matter of dental legislation, including admission to practice of the non-graduates. The address was, on motion, referred to a committee consisting of Drs. J. Taft, J. Y. Crawford, and B. H. Catching.

The report of the Committee on Prosthetic Dentistry was presented, and Dr. T. P. Hinman read a paper entitled, "An Original Method of Protecting the Tips of Porcelain Teeth in Bridge Work, and a Simple Method of Banding a Logan Crown." His method of protecting porcelain facings from the strain of use was to bevel the porcelain on the inside upon a corundum stone, grinding toward the cutting edge, so as to leave it quite sharp. The tooth is now backed with gold, the backing being left to extend one-sixteenth of an inch beyond the cutting edge, but not lying close to it. All of the backing, except that part over the cutting edge, is then covered with wax, and it is so invested as to cover everything except the wax. After the removal of the wax, solder is flowed over it to the proper contour. The teeth are then waxed into proper position on the bridge, invested and united by solder. After cooling, the projecting edges of the backing, which have not been covered by solder, are burnished down upon the teeth, and the piece is finished.

To band a Logan crown, the essayist prepares the tooth as for a Richmond crown, and fits to it a band of gold more than usually wide, and larger at its opening than at the root end. A crown is selected and ground approximately to fit the root. The band is then put in place and the end of the crown ground so as closely to fit it, when it is driven home with a mallet. The whole is then removed and the front part of the band ground away, leaving it long on the palatal portion, which is carefully burnished down to the porcelain and over the bulbous portion, thus causing it to hold the crown firmly.

Dr. Parr, of New York, said that it would be found difficult to burnish the gold down upon the porcelain tip so that it would protect it.

Dr. Kulp, of Davenport, Iowa, said that he had never been able to accomplish this satisfactorily, but had depended upon the use of platinum, carefully annealed and burnished down, which was then covered with solder.

Dr. Hinman, in closing, said that he secured the adaptation of the gold to the beveled edge by rubbing it down with a piece of corundum or pumice stone.

A paper was read by Dr. E. P. Beadles, of Danville, Va., upon "Anterior Fillings," and at the evening session, another by Dr. S. W. Foster upon "Some of the Merits of Contour Fillings made in the Laboratory."

The forenoon of each day after the first was taken up by clinics, at which various manipulative procedures in operative and mechanical dentistry were demonstrated. The clinicians were plentiful, and the most of the operations of interest. The members gathered about the operating chairs and mechanical benches, freely conversing and discussing, and at times criticising the different methods recommended and followed. All seemed to take a lively interest in them, which continued unabated to the end.

The heat was at times intense, and it sometimes became necessary, for those who came from a northern climate especially, to adjourn to the cooler verandas, where the breeze from the bay could be felt, but nothing seemed to dampen the ardor of some of the southern members. On the morning succeeding each clinic, a report was made to the Association upon the methods employed, and the success which attended them.

A number of papers were read by different members, some of which were of a high order of merit, others being rather too dogmatic in their assertions for ready acceptance. This is always an evidence of narrow views, of insufficient experience and restricted observation. When one becomes familiar with other methods than his own, and thoroughly comprehends basal principles, he learns that mere methods of manipulation count for very little, and that scientific laws are broad in their application.

On Friday evening, Dr. W. C. Barrett, of Buffalo, by special invitation, gave an account of the organization of the University of the State of New York, and the good work which it is doing in educational matters, with the new regulations which, by authority of the Legislature, it has imposed upon professional schools of New York. He described the duties of the Regents of the State University, and their supervisory powers over all the higher educational institutional institutions of the State. He gave an account of the Regents' examinations, and the Regents' certificates of qualification in the various higher studies, and said that within the past year they had issued regulations for the matriculation of dental students, which were identical with those of medicine. Henceforth, no student could be received in a dental college within the State of New York, without the evidence of preliminary training that a Regents' certificate gives.

The Deans will henceforth have nothing to do with determining the qualifications of proposed students. They have no authority, save to receive those who come armed with the Regents' certificate.

The reports of the Committees on Chemistry, on Pathology and Therapeutics, on Dental Education, on Histology and Microscopy, and on Dental Hygiene, were presented at different times, together with those on Literature, on Operative Dentistry, and on Appliances and Improvements. These were, in some cases, accompanied by papers, and all were enthusiastically and intelligently discussed. The members of The Southern Dental Association are more given to rhetoric than is usual in the American, and the eagle occasionally screams his loudest. Sometimes, as in other societies, there is too much talk for the mere sake of talk, and sound subdues sense, but there is never a lack of attention, nor a flagging of interest in the proceedings. Altogether, the meeting was a profitable one, and the mingling of the representatives from the extremes of the country, members of the Southern and the American Associations, tended to broaden the views of all and to be mutually beneficial.

The place selected for the next meeting was Atlanta, Ga. The officers elected to serve for the coming year are: President, H. E. Beach, Clarksville, Tenn.; first vice-president, John L. Thompson, Atlanta, Ga.; second vice-president, Louis P. Dotterer, Charleston, S. C.; third vice-president, J. W. Seals, Stuttgart, Ark.; corresponding secretary, E. P. Beadles, Danville, Va.; recording secretary, S. W. Foster, Decatur, Ala.; treasurer, H. A. Lawrence, Athens, Ga.; executive committee vacancies, S. B. Cook, Chattanooga, Tenn., V. E. Turner, Raleigh, N. C.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

ELEVENTH ANNUAL MEETING.

The eleventh annual session of the National Association of Dental Faculties was held at the Hygeia Hotel, Old Point Comfort, Va., commencing Saturday, August 4, 1894; the president, Dr. H. A. Smith, of Cincinnati, in the chair.

The resignation of Dr. J. E. Cravens as secretary was accepted, and Dr. Louis Ottofy, of Chicago, was made secretary *pro tem.*

The following faculties were represented:

Baltimore College of Dental Surgery—B. Holly Smith.
Boston Dental College—J. A. Follett.
Chicago College of Dental Surgery—T. W. Brophy.
Harvard University, Dental Department—Thomas Fillebrown.
Kansas City Dental College—J. D. Patterson.
Missouri Dental College—A. H. Fuller.
New York College of Dentistry—Frank Abbott.

Ohio College of Dental Surgery—H. A. Smith.
Pennsylvania College of Dental Surgery—C. N. Peirce.
Philadelphia Dental College—S. H. Guilford.
State University of Iowa, Dental Department—W. O. Kulp.
University of Michigan, Dental Department—J. Taft.
University of Pennsylvania, Dental Department—James Truman.
Vanderbilt University, Dental Department—H. W. Morgan.
Louisville College of Dentistry—F. Peabody.
Southern Medical College, Dental Department—C. V. Rosser.
University of Tennessee, Dental Department—J. P. Gray.
University of Maryland, Dental Department—F. J. S. Gorgas.
Royal College of Dental Surgeons of Ontario—J. B. Willmott.
Columbian University, Dental Department—H. C. Thompson.
Northwestern University Dental School—G. H. Cushing.
American College of Dental Surgery—Louis Ottofy.
National University, Dental Department—J. Roland Walton.
College of Dentistry, University of Minnesota—T. E. Weeks.

The following schools were admitted to membership during the meeting:

Western Reserve University, Dental Department, Cleveland, O. —H. L. Ambler.
Western Dental College, Kansas City, Mo.—D. J. McMillen.

With reference to the application of Howard University, Dental Department, the Executive Committee recommended that in consequence of changes in and inadequacy of its dental department the application be rejected. The report was adopted.

The report of the Executive Committee recommending the admission of the University of Buffalo, Dental Department, to membership, was amended by the addition of the following clause, and then adopted: "When the honorary degrees conferred on Messrs. Southwick and Howard are returned to the university and revoked, and official notification of such revocation filed with the secretary of this association."*

The amendment to rule 5 offered by Dr. Hunt last year, making the rule read as follows, was adopted unanimously:

"(5.) STANDING OF UNDERGRADUATES IN MEDICINE.—Undergraduates of reputable medical colleges, who have regularly completed one full scholastic year, having attended at least seventy-five per cent. of a five months' term, and passed a satisfactory examination in the studies of the freshman year, may be admitted to the junior grade in colleges of this association, subject to other rules governing admission to that grade."

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*The Dental Department of the University of Buffalo complied with these conditions on Aug. 13, 1894, and is therefore admitted into full membership.—LOUIS OTTOFY, *Sec.*

The following new applications for membership, with their recommendations, were reported by the Executive Committee:

Dental Department, Cleveland University of Medicine and Surgery, Cleveland, O. Recommended by Drs. J. Taft and J. E. Garretson.

Cincinnati College of Dental Surgery, Cincinnati, O. Recommended by Drs. James Truman, T. W. Brophy, F. J. S. Gorgas, and J. A. Follett.

Birmingham Dental College, Birmingham, Ala. Recommended by Drs. H. W. Morgan and C. V. Rosser.

University College of Medicine, Dental Department, Richmond, Va. Recommended by Drs. F. J. S. Gorgas and H. W. Morgan.

Atlanta Dental College, Atlanta, Ga. Recommended by Dr. H. W. Morgan and the faculty of the University of Tennessee, Dental Department.

The amendment to by-law 4, which was offered by Dr. Hunt last year, was laid on the table.

The resolution offered last year by Dr. Sudduth, directing the addition of Latin and physics to the entrance examination, was also laid on the table.

The special committee appointed last year to consider the matter of the vote of censure passed upon the Baltimore College of Dental Surgery reported, through its chairman, Dr. C. N. Peirce, recommending that no further action be taken. The report was adopted.

Dr. Louis Ottofy offered a recommendation, which was adopted, that all colleges, members of this association, shall increase the college course of 1895–6 to not less than six months.

The following resolution from the Executive Committee was adopted:

Resolved, That any college or colleges making application for membership in the National Association of Dental Faculties shall be required to secure and present to the Executive Committee the approval and indorsement of the board of dental examiners of the state (where such boards exist) in which such colleges are located, before their application can be considered.

The following from the Executive Committee was laid on the table:

Resolved, That we regard it as inconsistent for any member of a faculty of any college holding membership in this body to at the same time be a member of any state board of dental examiners.

The report of the *ad interim* committee with reference to charges preferred against the University of Maryland, Dental Department, was referred to the Executive Committee, which reported as follows:

"Your Executive Committee respectfully report that they find that the University of Maryland, Dental Department, in the reception of certain students did violate the regulations of this association, through a misapprehension of the rules, as it is interpreted by your committee that the regular sessions of all colleges close with their commencement exercises."

The report was adopted.

Dr. Guilford moved that rule 11, p. 12 of the "History" be understood to mean that students coming from a college not a member of this association will not be given credit for any time spent in such institution.

The annual dues were increased from $3.00 to $5.00, on motion of Dr. Cushing, the increase to take effect in 1895–6.

On motion of Dr. Truman, the special committee on preliminary examinations was instructed to have prepared by a competent person and presented at the next annual meeting a list of questions of a standard covering every branch required in the grammar schools up to the point of admission to the high schools.

On motion of Dr Abbott, it was ordered that each college should each year present its announcement, noting any changes, the secretary to note and publish all important changes in the annual report of the association. On motion of Dr. Morgan, all the schools were required to comply with the rule regarding dissections.

On motion of Dr. Ottofy, a committee of three was appointed to revise the constitution and by-laws, with the further instruction, on motion of Dr. Truman, to drop the qualifying term "by."

The following were introduced, and under the rules lie over till next year:

By Dr. Peirce:

Resolved, That, in view of the recommendation of the Executive Committee, this association will require that all colleges, members of this association, shall extend the term of the session of 1896–7 and of succeeding sessions to not less than seven months each.

By Dr. Truman:

Resolved, That on and after the session of 1898–9 the regular session of each of the colleges belonging to this association shall be extended to four years.

By Dr. Ottofy:

Beginning with the session of 1896–7, the examinations conducted by the colleges of this association shall be in the English language only.

By Dr. Ottofy:

Beginning with the session of 1895–6, no college shall be permitted to retain membership in this association if it is conducted or managed, in whole or in part, by any person or persons who do not practice dentistry in accordance with well-recognized and generally accepted forms, generally known as dental ethics, or if they are owned in whole or in part by men or women who are engaged in disreputable dental practice, or if any college have upon its list of trustees, the faculty, demonstrators, or in any other capacity, any one who does not practice dentistry in accordance with the principles above mentioned. This shall refer to dentists only.

By Dr. Ottofy:

Beginning with the session of 1896–7, the following shall be the requirements for the admission of students to the colleges of this association:

a. A certificate of having successfully completed at least one full year's course of study in the collegiate department of any college or university registered by the regents of the State of New York as maintaining a satisfactory standard.

b. A certificate of having passed, in a registered institution, examinations equivalent to the full collegiate course of the freshman year, or to a completed three years' academic course.

c. Regents of the State of New York pass cards for any forty-eight counts.

d. A certificate of having passed the matriculation examinations of any university in Great Britain or Ireland, or of having completed a course of study recognized as an equivalent therefor.

e. A certificate of graduation from any registered gymnasium in Germany, Austria, or Russia.

f. A certificate of the successful completion of a course of five years in a registered Italian *ginnasio* and three years in a *liceo.*

g. The bachelor's degree in arts or sience, or substantial equivalents, from any registered institution in France or Spain.

h. Any credential from a registered institution, or from the government in any foreign state or country, which represents the completion of a course of studies equivalent to graduation from a registered New York high school, academy, or from a registered Prussian gymnasium.

By Dr. Gray:

Resolved, That law 7 of the by-laws, which now reads "attendance upon three full courses of not less than five months each in separate years shall be required before examination for graduation," be amended by substituting "six" instead of "five," to take effect on and after the year 1896–7.

By Dr. Willmott:

Resolved, That at least twenty-nine months intervene between the beginning of the freshman year and the date of graduation.

The Committee on Text-books presented the following report, which was adopted:

Your Committee on Text-books would report that only two works of this character have been presented for its consideration:

One, a work on "Dental Anatomy and Pathology," by Dr. C. F. W. Bödecker, of New York, 700 pp.; and the other, a smaller and less pretentious work of about 75 pp., on "Operative Technics," by Dr. Thomas E. Weeks, of Minneapolis.

Both of these works are in press and nearly completed. The treatment of their subjects is full, clear and concise, and the illustrations numerous, well executed, and for the most part entirely new.

Your committee would therefore recommend these two works for indorsement as text-books.

Suitable resolutions regarding the death of Drs. R. B. Winder and W. H. Eames were presented and adopted, and the secretary was instructed to communicate a copy to their respective families.

The following officers were elected for the ensuing year: Frank Abbott, president; S. H. Guilford, vice-president; Louis Ottofy, secretary; H. W. Morgan, treasurer; J. Taft, B. Holly Smith, and Thomas Fillebrown, executive committee; James Truman, Truman W. Brophy, and Francis Peabody, *ad interim* committee.

Dr. Abbott, the newly elected president, was installed, and appointed the following committees:

Committee on Schools—J. A. Follett, F. J. S. Gorgas, Louis Ottofy, C. N. Peirce, and Truman W. Brophy.

Committee on Text-Books—J. D. Patterson, A. O. Hunt, J. B. Willmott, T. E. Weeks, and J. P. Gray.

Adjourned.

THE NATIONAL SCHOOL OF DENTAL TECHNICS.

SECOND ANNUAL MEETING.

Last year, at Chicago, after the meeting of the Columbian Dental Congress, a number of gentlemen who were interested in the teaching of technics in dental colleges, met together and determined to form a permanent organization. Dental technics as a special system was first taught in the Chicago College of Dental Surgery, by Prof. G. V. Black. It at once attracted the attention of the educators in the profession, as it promised to make more effective a form of instruction that was too much neglected, and to give to dental students the information that they had previously been able to obtain only in actual practice.

The representatives of ten colleges then met, and after conference adjourned to meet at Old Point Comfort, Va., at the time of the meeting of the American Dental Association, in 1894. Accordingly the representatives of the ten colleges were called together and proceeded to perfect their organization. A constitution was adopted, and the name of "The National School of Dental Technics" was chosen as the distinctive title of the organized body.

Reports were made by Drs. Cattell, of Chicago, and Weeks, of Minneapolis, upon the systems pursued in the different schools, including the study of dental anatomy by making sections of teeth, and the printing of silhouettes, etc., with the manipulations necessary in the filling of teeth, as taught out of the mouth.

Dr. Wilson reported a system of technical work in prosthetic dentistry, including crown and bridge work, and Dr. Bailey a report of laboratory work covering the making and tempering of steel instruments, vulcanite, metal, and continuous gum work, and apparatus in orthodontia. These reports were in a measure tentative, it being left for the future to reduce them to a consistent practical course by successive steps.

The constitution adopted provides for the election of a president, vice-president and secretary-treasurer, to be chosen annually, and an executive board of three members, to be elected to serve one, two and three years, respectively.

THE DENTAL PRACTITIONER

AND ADVERTISER.

DR. W. C. BARRETT, ... EDITOR.

BUFFALO, N. Y., OCTOBER, 1894.

THE DENTAL DEPARTMENT OF THE UNIVERSITY OF BUFFALO.

So many misstatements have been made concerning the Buffalo school, and the action of those connected with it has been so misunderstood, that it has been deemed advisable that a plain statement of all the facts connected with its organization should be made, not through secular newspapers, or by any other unprofessional methods, but in a journal devoted to dentistry and the dental profession. The Faculty of the school have tried to keep within professional lines, and to avoid any personal controversies, and they do not now propose to do or say anything unbecoming professional men. But justice to those whose good names have been assailed, and whose motives and actions have been so misjudged, demands that the plain truth should be told. Let it be understood that before its publication this statement has been submitted to those whose names are employed, and that they pronounce it accurate so far as their own personal knowledge extends.

It is a matter of history that no dental college has been organized in any city during modern times, without more or less of local opposition, and too often of factional bitterness which has degenerated into personal malice and vindictiveness. It is not very much to our professional credit that this should be the case, but professional jealousies exist almost everywhere. Many cannot view with any degree of complacency what might appear like the advancement of another, and this spirit has too often defeated worthy undertakings.

The Buffalo Dental College is not a thing of yesterday. Forty years ago the late Dr. Geo. E. Hayes contemplated the establishment of such a school. Twenty-six years ago the editor of this journal was one of a committee to whom was referred the question of the propriety of its immediate organization as a department of the University of Buffalo. It has always been the desire of the Council of the University that it should be opened, that all the different branches of medical science might be taught within its walls. More than seven years ago the editor of this journal received the following communication:

"BUFFALO, N. Y., May 12, 1887.

Dr. W. C. Barrett:

We, the undersigned, teachers in the University of Buffalo, desirous of seeing its sphere of usefulness extended, and feeling that the times are ripe for the establishment of a Dental School in this section of the country, realizing moreover the important relations existing between dentistry and medicine, and looking to yourself as the suitable person to undertake the task of organization, would hereby request you to sound the sentiment of your professional associates, and, if possible, endeavor to unite them with us by the establishment of a Dental Department in said University, in which endeavor we pledge our individual and united coöperation."

This was signed by every professor and teacher in the University, except the one to whom it was addressed, for he was then as now a teacher in the Medical Department, which doubtless was the principal reason why he was called upon. The communication was quietly pigeon-holed for nearly five years, no action whatever being taken by the one to whom it was addressed. At the end of that time the University had determined to erect new, elegant and commodious buildings, so that the excuse could no longer be urged that there was no room for another department.

The next step is detailed in the following letter from Prof. Roswell Park, the well-known surgeon, a communication written after opposition to the school had been developed, and at the request of the one to whom it was addressed:

"BUFFALO, N. Y., June 11, 1892.

Dear Dr. Barrett:

In reply to your letter, I wish to say that for a considerable number of years the University of Buffalo has contemplated organizing a department of dentistry, and would have done so long ago had it had accommodations to offer. When it contemplated new buildings, the architect was directed to provide space for it. After the plans were drawn, I requested you, you will remember, to inspect them. You then asked if we had definitely decided to open such a school, and I replied that it had been decided now so to do, and that we very much desired the coöperation of yourself and all the dentists of Buffalo, but, if this were refused, or if they opposed it, the sooner we knew it the better, in which case we should secure what help we needed from abroad, distasteful as such a step would be. We were fully convinced that there was talent and teaching ability enough in this city to conduct a *good* school successfully, and we contemplated seeking it elsewhere only in case of discouragement at home.

You then agreed to lay the matter before the dentists of Buffalo, and we have since then relied on local assurances given us. So far as I know, our only misunderstanding has been that we did not realize that you felt any interest in a scheme that seemed smouldering. You have now the heartiest backing which the Council and the Medical Faculty can give, and you may assure any and all that the new Dental School will be established—nay, is established—in spite of all short-sighted opposition.

I have meant in this letter to state the substance of interviews held with you long ago, and to reassure you of our active coöperation now. It is a matter of deep regret, but not of the slightest dismay or discouragement, that some of your dental brethren have seen fit at the outset to say and do things which show anything but a fraternal spirit. But I believe that no college was ever started without something of that kind.

Sincerely yours,
Roswell Park."

Immediately after the interview mentioned in the first part of the preceding letter, Dr. Barrett sought an interview with three or four of the oldest and most prominent dentists of the city, and submitted to them the facts, and asked their opinion whether, as a Dental Department was a foregone conclusion, it was not the bounden duty of Buffalo dentists to give the scheme their support, and endeavor to secure the best college possible, rather than to see men from outside come into our city and perhaps organize a school that might not be a credit to us. All were of the opinion that our duty was plain, and that it was advisable to call together the dentists of the city and lay the matter before them. This was accordingly done, and at that meeting, after due discussion, a motion was made that in the opinion of those present, including nearly all the dentists of the city who were connected with any dental society, it was advisable now to organize a Dental Department of the University of Buffalo. A committee of five was appointed, with power to act, consisting of Drs. Southwick, Barrett, Straight, Snow and Freeman. That committee met, and after earnest discussion could not devise any manner in which the necessary money could be raised for the establishment of the school, the University itself having exhausted every dollar of its funds in building. Finally the matter was, upon vote, referred to Drs. Barrett and Southwick, as a sub-committee, with power to act, and to organize the school if they could secure the necessary funds.

The sub-committee met with the Chancellor and a committee of the Council, and received their pledge to coöperate to the extent of their ability, and obtained their advice as to the course to be pursued. They also met with a committee from the Medical Faculty, headed by its Dean, and laid before them a plan of action in which they proposed to ask for subscriptions to stock in the college, each subscriber to have a voice in its management. They were immediately informed by the committee that the scheme was impracticable and impossible, for two reasons. In the first place, every dollar invested must become the property of the University, and its title rest in the Council. Hence there would be nothing on which to base any issue of stock. This was a disagreeable surprise, and was nearly the death of the enterprise. The other reason for the impracticability of the scheme was that the department must be organized in the same manner as the other departments, and, as with them, the management must rest in a governing board, which should not consist of over five persons. These would be appointed by the Council, and would be held responsible for the proper conduct of the school, they being removable for cause at any time. They were told there was no other possible way in which the department could be organized. The sub-committee urged that unless all were appointed by the same authority, it might cause dissatisfaction and dissension. They were assured by the Medical Committe that if they expected to have entire unanimity among all the members of the profession in a city of the size of Buffalo, they would find themselves much mistaken; that the only way was to go ahead, select such men as were best qualified, and proceed with the organization. They were warned that unless they did this, they would encounter yet greater difficulties, and the result has proved the accuracy of the prediction.

The sub-committee finally reluctantly agreed to the appointment of a governing board of five members, and they were selected, this board to assume all the financial responsibility. One of those named subsequently refused to take the position, because he declined to become financially responsible for a considerable sum, the repayment of which then appeared extremely problematical. The names of the other four were sent to the Council and duly appointed.

From that time commenced the disagreements. The sub-committee called a meeting of the original General Committe, but two of the members persistently refused to attend, although they were strongly urged to come and hear the report of the sub-committee, who, they were informed, had proceeded upon the only possible plan, and had constantly acted under the advice of the Medical Faculty and the Council. But four members of the committee ratified the action, and a Faculty was named, equipments purchased, and the rooms fitted up at the expense of the members of the Governing Board. From that time a number of dentists who were not appointed on the Governing Board, with some who had no claim to such a position, have been unceasing in their opposition. Doubtless they felt that it was a grievous wrong that they were not named instead of others, but the number to be chosen was necessarily very limited, and the Council appointed those whom it desired. It could not be otherwise, whatever individual wishes might be. This difference of opinion has been a matter of great regret to those connected with the school, for they strongly desired the coöperation of their brethren, with whom they had always lived in peace and fraternal unity. But they knew that they were in the path of manifest duty, and they patiently submitted to the wrong that they felt was done them in the censure and upbraiding of their brethren, consoling themselves with the knowledge that at some day in the future, when it became known that they took the only possible course open to them, they must be fully exonerated.

The college has constantly flourished, and the number of students making application for entrance has been as great a surprise to the teachers as it could be to any one. The members of the Governing Board and of the Faculty could have no unworthy or selfish ambition. There was no immediate expectation of a reimbursement of the money expended, to say nothing of remuneration for services rendered. The position of most of them was already assured, and they had nothing to gain. The senior member of the Faculty was already a professor in one of the first dental colleges of the world, and his heart was warmly interested in that Chicago school. But as he had always felt and manifested an interest in everything that pertained to the welfare of his profession, he could not consistently refuse a part in so important a professional undertaking as was this, located in his own city.

The members of the Examining Board of the State Dental Society were appointed Curators of the school, and their approval made necessary to the graduation of students. They attended the first commencement exercises, examined the graduating class, and at the next meeting of the State Society earnestly recommended the school for formal recognition. This was opposed by the local dentists who were not in sympathy, the matter was fairly tried, and by an overwhelming vote the school was approved.

The college made application to the National Association of Dental Faculties for admission. When the time for election came, it was opposed by some who had an interest in its exclusion, and by others who had been prejudiced by the misstatements made. The only charge that could be brought against it was, that upon the recommendation of the Medical Department, before the organization of the Dental Department, honorary degrees had been conferred upon two men, concerning whose standing and worthiness not even the bitterest opponents of the school could urge anything. One of them was one of the founders of the State Dental Society, and had been the President of the Board of Censors, the State Dental Examining Board, for many years.

The National Association of Faculties had passed a resolution that no honorary degree should be granted by any of its members without the consent of all. But when the honorary degrees were granted by the University of Buffalo it had no Dental Department, and consequently could not be amenable to the regulations. But, nevertheless, it proposed to submit the matter to the Association and abide by its decision. Accordingly it made no answer to its enemies, but its representative, at the proper time, submitted to the Executive Committee of the Association, to which is referred all such matters, the following verified statement:

"BUFFALO, N. Y., JULY 15, 1894.

Prof. W. C. Barrett:

In reply to your request, we gladly state the exact circumstances under which the honorary degree of Doctor of Dental Surgery was conferred upon A. P. Southwick, M. D. S., and F. E. Howard, M. D. S., of this city, by the University of Buffalo.

When the new University building was determined upon, the Council decided to complete a step which it had long contemplated, in the organization of a Dental Department. To signalize the event, to mark its high appreciation of the great professional advancement which dentistry had made, to demonstrate to the dental profession its warm professional feeling, and as a pledge of its hearty coöperation, the Medical Department formally requested the Council to vote, and the Chancellor to confer upon certain men concerning whose qualifications there could be no question, the honorary degree of Doctor of Dental Surgery, the charter of the University empowering it to confer that, or any other recognized degree. This was accordingly done, without any suggestion from, and before the organization of, the Dental Department.

The University deeply regrets that this simple act of professional courtesy and homage, intended as an honor, not alone to the gentlemen selected, but to the dental profession of the country as well, should have been misinterpreted and misconstrued, and that an attempt has been made to use it to the prejudice of the men so honored, and to the injury of the Dental Department of the University. Had the Council for an instant supposed that this act of fraternal regard and professional courtesy could have been criticised, or that it could in any way have offended the susceptibilities of any part of the dental profession, it might, and would have chosen some other method of manifesting its respect and of conferring distinction upon those whom it considered representative men in dentistry.

E. C. SPRAGUE,
Chancellor.
F. M. HOLLISTER,
Secretary of Council.
MATTHEW D. MANN, M. D.,
Dean of Medical Department.
JOHN PARMENTER, M. D.,
Secretary of Medical Department."

"Since my name has been used in a communication sent to the members of the National Association of Dental Faculties, I wish most heartily to endorse the above, and emphatically to deny the essential statements contained in that communication, as well as to express my condemnation of the generally unprofessional and undignified course pursued by its author throughout the whole controversy.

ROSWELL PARK, M. D.,
Professor of Surgery."

This communication, with one of approval from the Secretary of the Board of Regents of the University of the State of New York, and another from the State Dental Examining Board, was submitted to the Executive Committee of the National Association of Dental Faculties, and their decision was asked, the school agreeing to abide by it, although one of the members was its principal opponent, while sitting as its judge. The decision was that the committee could not recommend it so long as those degrees were in existence, at the same time saying that in every other respect the college was regular, reputable and commendable. The degrees were therefore resigned by their recipients, revoked by the Council of the University, and the instrument of revocation filed with the Secretary of the Faculties Association, when it was admitted to full membership.

The Buffalo University still believes that, under the circumstances, it was not amenable to the Faculties Association, and that the degrees were regularly and reputably conferred, but the Dental Department, feeling that it wished to be in harmony with its colaborers, preferred to yield the point, that it might not by any prejudices be hampered in the work which it proposed to do in assisting to raise the professional standard, and it rests content with the outcome of the whole matter.

The department has felt that in justice to itself it must make this statement, necessarily a long one, that its students, and the profession in its own vicinity especially, might know the exact facts concerning differences which it has deeply regretted, but which it had not the power to avert. The Faculty has waited until the school was thoroughly and successfully established before it made any public statement, believing that it was neither professional, dignified nor proper to do so before. They have felt like Nehemiah of old, and when the modern Sanballats have endeavored to obstruct their work, they have desired to answer with him, 'We are doing a great work, so that we cannot come down; why should the work cease, whilst we leave it and come down to you?'

A NATIONAL DENTAL ASSOCIATION.

At the late meeting at Old Point Comfort, a committee was appointed on the part of the American Dental Association to bring about, if possible, a consolidation of that with the Southern Dental Association. There are many reasons why a single association representing all the dentists of America is desirable. It would tend to unify the profession, and to secure the same general regulations in all the different States. It would exert a wholesome influence upon legislation, and perhaps bring into harmony the present discordant laws. It would make dentistry strong by presenting a united front. It would secure added respect for our specialty by directly appealing to all sections as a whole. It might secure desired reforms, because all sections would be represented, and such a body could speak with authority.

But a union of the profession of all the States in one single society would, if all were represented, make a body that would be somewhat unwieldy. There would be so many different interests involved that the desired harmony might be difficult to attain. The representatives of some sections would have so far to go to attend meetings, that there could not be a continuous membership. It would be necessary for it to meet in the different sections in rotation, and this would destroy the present social interests of the meeting, because, the membership being so largely changeable, the majority would be strangers to each other. The time for the meeting would be difficult to determine. Northern men do not like to go south during the heated term, and that is the time in which they take their vacation. Such a plan might result in a diminution of the attendance upon the general society meetings, because the majority of the members of any section of our great country could not attend them, save on the years when it was held in their midst.

What can be done to harmonize these diverse conditions, and secure the advantages, without subjecting dentists to all the inconveniences of annually making such a journey as a general union might imply? It seems to us that this might be accomplished by a triennial conclave of representatives from sectional associations. The exigences of distance, community of feeling, and united interests, naturally demand the existence of at least three general associations — a northern, a southern, and an occidental. If from each of these delegates could meet every three years in a strictly National Association, that should meet alternately at some point in the north, the south, and upon the Pacific slope, all the divisions of our widely scattered profession might be consolidated, and a true national professional spirit thus be encouraged.

The American Dental Association has often received members from the far west, but although frequently invited it has never yet held its sessions beyond the Rocky Mountains. If it desires to be considered national in its character, it must at some time in the near future make a journey across the continent. It is a duty which it owes to the profession of the Pacific States. Year by year a few members have urged this, but some opposing interest has always appeared to urge another locality for some specious reason, and a union of forces has been formed to defeat the west. This must cease for one year, and the American Dental Association must make a pilgrimage across the great plains, or abandon its claims to complete nationality.

If the project to unite the American and the Southern Associations fails another year, it would seem that it might be wise to foster the organization of three general associations, and the formation of a fourth, to be composed of delegates from or members of the other three, that to meet triennially, alternately in the north, south, and far west. We commend the subject to the thoughtful consideration of the members of the A. D. A., knowing that a discussion of the subject will bring out its advantages and exhibit its demerits.

WHAT DOTH IT PROFIT?

It is often urged that modern investigation and discovery has availed man little, and that all our knowledge of the microscopical world has not materially benefited the human race. We are told that the demonstration by Miller that dental caries is due to bacterial agency has not prevented the decay of teeth, nor lessened the demand for the service of the dentist. But it has armed him with new weapons, and enabled him better to meet the ravages of disease. The dentist can save teeth better now than he could even a decade ago, and he who best comprehends the discoveries of Miller can best save teeth.

The term of human life is constantly being lengthened, and this is mainly through our comprehension of bacteriology. The zymotic, or infectious diseases, owe their virulence to the action of microbes. All the great plagues which in the past devastated the earth, were caused by the proliferation of micro-organisms, due to lack of hygienic precautions. With our better understanding of their character and the laws which govern their multiplication, these terrible periodical scourges have lost their terrors, and no longer waste the nations. Except among the ignorant hordes of India and Africa, the plagues which once periodically decimated the people no longer exist. When they reach the borders of lands in which their character is known, they are stayed.

Yet it is not comparatively a long time since the great epidemic diseases were believed to be sent by God as a punishment for the wrongdoings of man, and it was thought his duty to bow in submission and patiently wait until the malady had exhausted the soil in which it flourished, instead of cleaning the filth away and destroying the infectious matter. Had David, when he was warned of the impending calamity, but vigorously set about a sanitary reformation among his filthy people, he might have stayed the course of the destroying angel before he reached the threshing-floor of Omar the Jebusite.

The destruction of the human family that has been brought about through bacteriological agency is almost inconceivable. In the fourteenth century a contagious disorder, the so called black plague, ravaged the whole of Europe and Asia, and 60,000,000 people perished, a fatality sufficient entirely to depopulate the United States. During five months of its visitation to Naples, in Italy, in 1656, 300,000 people died. Even in London, in 1665, there died within a few months 69,000 persons. In Toulon, in 1721, one-third of the population died. It is easily within the memory of men now living when cholera seemed utterly uncontrollable. Even in Buffalo it numbered its victims by the hundred. Yet who fears a general invasion of cholera now? Civilized nations stamp it out at once, as soon as it has gained entrance. There are no wide-spread visits of epidemical disorder now.

And all this is due to our better comprehension of biological science. Death is still in the world, and always will be. But men do not so often die unnecessarily since the general spread of sanitary knowledge. The time is coming, and even now is, when teeth are not recklessly lost, and the period of edentulousness comes later in life than formerly. Is this not worth the study that has been given to oral bacteriology? Let it never again be said that there is nothing gained by a study of the theoretical part of dentistry, nor the assertion made that we are deteriorating through a neglect of the practical.

DENTISTRY—STOMATOLOGY—ORISTRY.

There is in France a body of practitioners well represented by the illustrious Magitot, who do not recognize the term "dentist," but who call themselves "stomatologists." A number of practitioners in America —and they have in their ranks some of the best men in our specialty— are urging a change in the name of our practice. Sneers have been directed against them in certain quarters, and they are charged with setting themselves above their brethren, and as belonging to the dilettante. But the desire for a broader and more expressive title for our calling is not altogether an affectation. There is some propriety in the demand. It is not at all probable that a term that has so long and so generally been in use, and under which such signal advance has been made, a title that has won favor as distinguishing a practice that has come to be recognized as strictly professional when worthily followed, can be at once abandoned by the world. Nevertheless, on some accounts it seems a pity that it should have originally been adopted.

Dentistry is derived from the Latin *dens*, a tooth, and it implies operation upon and treatment of the diseases of the teeth. This covered the practice of a few decades since, but it falls far short of that of to-day. The dentist of this generation is supposed to be capable of ministering to any of the diseases of the oral cavity. Oral surgery is a part of it, and some of our distinctive practitioners are winning fame in that difficult field. Not only does their familiarity with all the oral tissues peculiarly qualify them for this, but their manipulative skill, won through their dental operations, is universally acknowledged. Oral surgery presents some difficulties not found in the other fields, and one who is in daily practice as an operative dentist attains to a digital dexterity that peculiarly fits him for surgical operations in the mouth.

There are very many oral diseases whose proper treatment falls within the province of the qualified oral practitioner. They form a class by themselves, and to the dental pathologist, year by year, are they more frequently referred by the general medical practitioner. The competent dentist is recognized as the proper professional man to assume the care, not only of all the tissues of the oral cavity, but of the contiguous parts as well. Hence he becomes something more than a dentist, in the strict sense of the term. The dentist is only supposed to be familiar with the diseases of the teeth themselves, and for those whose practice is entirely confined to the cleaning, filling or extraction of teeth, and the construction of artificial substitutes, perhaps the word is sufficiently comprehensive. But it does not cover the practice of those who are oral pathologists. Its common use carries with it a restricted meaning, and to the educated physician especially, it does not convey the purport with which it should be invested. In time, perhaps, we will teach the world to give it a broader signification than its etymology strictly warrants, but if a more comprehensive term had first been chosen, who is there that does not believe it would have been better?

Dr. J. L. Williams, of Boston, sent to the American Dental Association a paper in which he urges the selection of "Oristry" as the most proper term for our practice. He says its Latin derivation from *os*, the mouth, makes it more desirable, as most nearly resembling in that particular dentistry, from the Latin *dens*, a tooth, while at the same time it is sufficiently comprehensive. He objects to the term stomatology, as conveying the idea of being in some way related to the stomach.

But it is difficult to see the force of this last argument, there being no nearer relation between the words than there is between oristry and forestry. Stomatology is derived from the Greek word *stoma*, meaning a mouth, and so the two words really have precisely the same signification. The term dermatologist, as a specialist in another field, is derived from the Greek *derma*, the skin; gynecologist from two other Greek words, *gune* and *logos;* laryngologist from the Greek *larynx;* and even surgery comes from the Greek *cheirurgos*. If another term is to be selected, then analogy would seem to demand that it be taken from the Greek, if a word of foreign derivation is to be used, and stomatology really seems to meet every demand.

But all the same, the good old word dentist will doubtless have to serve for some time yet. We can make it as much respected as would be any other term, if we will invest it with real signification, and couple with it in our practice all that stomatology or oristry might imply. When the time comes for our present practice to be divided, and those who claim that dentistry is no part of medicine will make their work conform to their ideas and confine themselves to mere mechanical manipulation, then those who cultivate a broader field may abandon to them the word dentist, if they claim it, and denominate themselves stomatologists, or orists.

THE FIFTIETH ANNIVERSARY.

In the report of the late meeting of the American Dental Association, seen on another page, will be found an account of the action taken, relative to the proper celebration of the fiftieth anniversary of the discovery of anæsthesia. It would have been very much to our discredit had the dentists not made some recognition of the importance of the occasion. That a public dinner should be given and papers be read is certainly very proper, but it seems insufficient. The dentists of Connecticut have taken steps to do something more. They will not only dine together, and have speeches, but by small subscriptions, that all may have a chance to contribute, they are raising a sum sufficient to procure and erect a proper tablet on the spot where the first administration of an anæsthetic agent for obtunding purposes was made.

This is commendable. It makes a permanent record, which will last long after the dinner shall have been digested and the speeches forgotten, while it will also call to the minds of future generations the great accomplishment of one dentist. It will be a perpetual memorial to the glory of our profession, and will tend to awaken feelings of respect and veneration for a young specialty that has given to the world such a priceless boon. Every passer-by will be reminded to pay his homage to Dr. Wells, and through him to the guild of which he was such a distinguished member. The erection of such a monument is an act that is unselfish in its character, and it appeals to something in our better natures.

A dinner, while it fosters those social feelings which so much need cultivation, is very fleeting in its nature, and speeches too often lapse into oblivion when the influence of the occasion has passed. Therefore, we hope that the banquet which will be given in Philadelphia will be but the occasion for something more permanent in its character. Nothing better could be devised to call men together, but if they come only to eat and drink, what shall it profit? If the city that has assumed the direction of this matter—and to whom other cities willingly relinquished it, because she asked it and took steps to secure it—if that city has nothing better to offer her visitors than oysters and champagne, she will have called us there to a poor purpose.

We do not by any means undervalue the memorable addresses which will be made, but believe that something permanent and lasting should be the outcome. Some statue, or tablet, or monument should be erected, that shall proclaim to all future ages what that modest man did on that memorable day in Hartford. Let it be placed in the capitol, or the metropolis of the nation, that pilgrims from other lands may see that we honor our great benefactors, and suffer not the memory of their great deeds to go down to dust and dim forgetfulness.

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DENTAL ANATOMY AND PATHOLOGY. For the use of Dental Students and Practitioners. By C. F. W. Bödecker, D. D. S. M. D. S. Philadelphia: The S. S. White Dental Manufacturing Company, 1894. Cloth, $5.00. [Adopted as a text-book by the National Association of Dental Faculties.]

Those who have been aware that for a number of years Dr. Bödecker has been engaged in the preparation of a new work on dental anatomy and pathology, have waited with a considerable degree of impatience for its appearance. He is known to be a tireless investigator, and one who does not confine himself to the ruts worn by those who have preceded him. Hence something original, and perhaps creative, was anticipated. He is fearless and regardless of precedent in his enunciation of what he believes to be truth, is positive in his opinions and thoroughly convinced of the facts upon which they are founded, and therefore it was believed that there might be something to antagonize in his results, and probably all classes will not find themselves disappointed or mistaken.

Of the desirability and necessity for a work of this kind there can be no question. Especially in pathology was there a demand for something new. There was nothing in existence that was satisfactory as a text-book, although enough of them have been published. But they were for the most part confined to some single portion of the great field, or they were too discursive in their character. The work of Prof. Carl Wedl, issued in 1872, was too general in its character for use as a text-book for students, and although of great value as a work of reference, it has become somewhat out of date. That of Mr. Salter, published in 1875, was liable to the same objections, and was not sufficiently systematic and thorough. The Manual of Alfred Coleman contained very little of pathology, and some of its statements were not generally accepted. Magitot's excellent work, published in 1878, was chemical and experimental, rather than practical. Arthur Underwood's capital work, issued in 1881, was not sufficiently specific for dental practice. It was too general in its tone, and so, valuable as it was for the practitioner, it had not generally been adopted by students in this country. Blodgett's Handbook of Dental Pathology, issued in 1888, contained too many errors of fact to be generally adopted, while works like those of Quinby and Sewell were contributions on some points in practice, rather than treatises written from the standpoint of the pathologist.

In fact no work has yet been issued, pretending to include all the diseases of the oral cavity, that has been written entirely with a view to the consideration of pathological changes. That which comes nearest to it is, perhaps, the work of Morton Smale and J. F. Colyer, published in London last year. But this work is too much devoted to questions of practice to be accepted as a text-book in pathology, even if we lose sight of the particulars in which the authors are not in harmony with general American ideas. Of course the question books and quiz compends of Gorgas, Flagg and Warner, can scarcely be recognized as text-books on pathological science. Whether the new work of Bödecker will fill the vacant niche only time can tell, but it is certainly an effort in the right direction, and can claim a consideration that none of its predecessors in the same field are entitled to, that of being written from a purely pathological standpoint, if we except the parts devoted to dental anatomy.

The author sets out with discarding the cell theory, so long entertained by physiologists and pathologists. He adopts the general views of Prof. Carl Heitzmann in tissue changes, and indeed many of those were developed through his own researches. The many years that Dr. Bödecker has spent in the study of the genesis of oral tissues here have their fruition. A glance at the table of contents will convince any one that no single author has before written anything so comprehensive as is this volume. Under the head of "Diagnosis," for instance, there are no less than forty-four sections, giving the special diagnostic symptoms of as many different pathological conditions of oral tissues, and those immediately connected therewith. Then there are thirty more under the head "Differential Diagnosis." Ten different forms of pericementitis are laid down. Of each of these the pathological changes attending it are detailed, its diagnostic symptoms minutely given, the subjective phenomena, the differential diagnosis, the prognosis and treatment are all laid down. And this is but an instance of the phenomenally close observation of the author, his skill in diagnostics, and the unwearied industry and care with which the work has been prepared.

That portion of the book devoted to dental anatomy is quite as carefully prepared as is that upon pathology. Chapter V., for instance, "The Pulp Chamber of the Teeth," contains a table of measurements of the pulp chambers of the thirty-two teeth in twelve different places, given in millimeters, to show, not only the relative size of the pulp, but the thickness of the superincumbent tooth tissues. To obtain these, a special apparatus was devised and made, and then hundreds of teeth were cut into sections and the measurements carefully recorded, an average of the whole being taken. To obtain a perfect set of teeth for the purpose of illustrating their arrangement, position and articulation, a whole year was spent, and almost the whole world ransacked, and even then the set obtained was not entirely typical in all the minutiæ, so rare are dentitions that are faultless.

It is impossible within the limits of an article like this to give a complete analysis of all the features of a work so comprehensive and yet so minute. It must be carefully studied as a whole before a fair idea of it can be obtained. No one can read it without having his ideas of the extent of dental practice materially enlarged. No one can study it without being impressed with the tireless patience and unwearied faithfulness of its author, as well as with his careful habits of observation. The critic may find passages and statements that he may antagonize, for histologists are not all in perfect accord on certain debatable points. But all must agree that this is one of the most notable contributions to dental literature that America has yet produced. In dental pathology nothing approaching it in completeness has yet been issued, and the dentist who has not carefully studied it cannot claim to be acquainted with the literature of his profession.

The illustrations are all, or nearly all, original, and are without exception the best that have appeared in any dental work with which we are acquainted. They were drawn from actual specimens by Prof. Carl Heitzmann, who is unapproachable as a delineator of that which he sees, and the engraving of them is remarkably clear and distinct. Some of them are well deserving commendation as works of art, so delicate is the tracery and so admirably handled is the light and shade. The type is large and clear, and the publishers may well feel proud of the book as a beautiful specimen of the typographic art.

It has often been said to the discredit of dentistry that there are so few men within its ranks who will purchase and read a book of real merit, that there is little encouragement for careful study and long continued observation, as neither publisher nor author will be sufficiently compensated. It is well known that editions of some of our most meritorious books lie for years upon the shelves unsold. Prof. Miller's exhaustive work upon the micro-organisms of the human mouth has met with but a slow sale in this country, while in Germany it is passing through successive editions. It is a pity that habits of study and reading cannot be better cultivated here. True practice must be founded upon true science, as has been wisely said, and we shall never take the rank in our specialty that we should occupy, until dentists purchase and read records of original investigation. It is to be hoped that the production of works of this character is but the harbinger of a new literary era in dentistry.

ATTFIELD'S CHEMISTRY. Fourteenth edition. Chemistry—General, Medical and Pharmaceutical; including the chemistry of the U. S. pharmacopœia. A manual of the general principles of the science, and their application to medicine and pharmacy. By John Attfield, M. A., Ph. D., F. I. C., F. C. S., F. R. S., etc. Professor of practical chemistry to the Pharmaceutical society of Great Britain, etc. Fourteenth edition, specially revised by the author for America to accord with the new U. S. Pharmacopœia. In one handsome royal 12mo. volume of 794 pages, with 88 illustrations. Cloth, $2.75; leather, $3.25. Philadelphia: Lea Brothers & Co., 1894.

If the usefulness of a book may be measured by the number of copies sold and the editions issued, then must Attfield's Chemistry be considered as one of the most successful works of the kind ever issued. Perhaps the secret of its great popularity may be found in its particular adaptation to the wants of a special class. It is pre-eminently a book for the student in pharmacy or medicine. While the principles of general chemistry as given in this volume do not, of course, differ in essence from those found in other text-books, yet their statement is specially adapted to the needs of pupils. It is so clear in its enunciation of chemical truths, and the language used is so attractive and plain, that it has ever been a favorite with them.

There is another feature in which the book excels, and that is in methodical arrangement. One principle is made to lead up to another, and their connection is so plainly pointed out that the progress of the pupil is not arrested, and without seeming effort he advances by almost imperceptible gradations until he is astonished to see to what heights he has climbed. It is this steady leading on without abrupt changes, that makes this book so valuable to educators.

The present fourteenth American edition, is issued concurrently with the fifteenth English, and almost every page gives evidence of the care that has been exercised in its preparation. Scientific chemistry has made such rapid growths within a few years, that a text-book soon becomes antiquated, and contains much that is obsolete, unless it be frequently revised. In this edition of Attfield every substance that is of interest to the practitioners of pharmacy and medicine is spoken of at a length corresponding to its importance, and the whole has been brought into complete harmony with the American pharmacopœia. The work may, with unusual confidence, be recommended to students as containing all that is latest in chemical science, and in notation and nomenclature.

A TREATISE ON PYORRHŒA ALVEOLARIS. A system for its prompt, positive and parmament cure. By Junius E. Cravens, D. D. S. Professor of Operative Dentistry in Indiana Dental College. W. M. Herriott, Publisher, Indianapolis, Ind.

If the author of this little book of forty-eight pages could establish its claim to be a system for the "prompt, positive and permanent cure" of that condition known as pyorrhœa alveolaris, its sale might be something phenomenal. His methods have been detailed before, and in the hands of others have not met with the success which he claims for them. He cannot be accepted as an authority, for his premises do not always warrant his deductions. He starts out with a theory, and that is the most dangerous thing that an author can possess, for he will be constant in his endeavors to make his facts conform to it. On page 15, for instance, he doubts the existence of deposits upon the teeth that have not been derived from the fluids of the mouth, but admits that it has been impossible to discover any connection between them. His theory is that they must have come from the mouth, and hence the sinus must be there, *and ought to be discovered.*

In the illustrative instances which he quotes, it is very evident that he has not diagnosed clearly, and his pathology is most decidedly mixed at times, Altogether, this little work can scarcely be considered a very valuable addition to the literature of the subject, nor do we think that his views will be very widely adopted by intelligent dentists.

A MANUAL OF DENTAL ANATOMY, HUMAN AND COMPARATIVE. By Charles S. Tomes, M. A., F. R. S. With 235 illustrations. Fourth edition. Philadelphia: P. Blakiston, Son & Co., 1894. Price $4.00.

The first edition of this standard book was published in 1876, and it at once took its place at the head of works of the kind, a position which it has maintained to the present time. That edition comprised about 400 pages, and contained 179 illustrations. The present edition has 559 pages, and 235 illustrations. It will thus be seen that the successive editions have not been mere re-issues, but careful revisions and substantial enlargements.

The work was originally intended for the study of odontology as a science. It is not simply a descriptive anatomy of the human tooth, but it considers the dentition of all the principal orders of animals, and hence is rather comparative than descriptive or surgical. Unfortunately this subject is one that does not assume the place that of right belongs to it in the ordinary curriculum of our schools. There are only a few of our colleges that pretend to include any course of lectures in even the outlines of comparative dental anatomy, and there are less that teach it as a science. The comparatively new methods of teaching dental technics as a separate branch, include the microscopical structure of each of the human teeth, while the lectures and instruction in histology give the microscopical formation of the tissues, but few students at graduation know anything of their homologies, or can even give the dental formulæ of the principal mammalia.

The writer has for some years annually given from five to ten lectures in this branch of dental science in the Chicago College of Dental Surgery, and Prof. Thompson has done the same or more in the Kansas City Dental College, but in neither school is it now possible to devote to the subject any more time, and even this is in advance of the instruction given in most colleges. Our teachings in this direction should be broadened, and then we would not present to the world the exhibitions of ignorance that have been made, when graduated practitioners write to the journals of instances in which animals have shed their teeth as anomalies. Every college course should include a series of lectures upon comparative dental anatomy, and no student should be permitted to graduate without knowing the dentitions of the principal orders of the heterodonts, at least. When this is done new editions of Tomes will be called for almost annually, for as a text-book it is unapproachable, and as such should be in the library of every dentist who makes any pretensions to professional intelligence.

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CURRENT NEWS AND EXCERPTS.

LITERARY NEWS.

Dr. R. Ottolengui, who is well known outside professional circles as the author of a number of successful books, has signed a contract with the publishers of the London "*Idler*," to write a series of short stories for that journal in the general style of the "Sherlock Holmes" series, which Mr. Conan Doyle contributed to the "*Strand Magazine*." They are to be illustrated by the best artists to be obtained. The publication will be begun in January, and will run through the year. The editors of the "*Idler*" are Robert Barr (Luke Sharp), and Jerome K. Jerome. Three stories, entitled "The Nameless Man," "The Montezuma Emerald" and "The Missing Link," have already been accepted. The series will be published in this country by a syndicate, and will appear in fifty or sixty of the leading Sunday papers.

Dr. Ottolengui's next work to be published in this country will be entitled "The Crime of the Century," and it will treat of heredity and environments in relation to the production of criminals. It will appear at an early day. Each of his books teaches a distinct lesson, and is written with the view of illustrating some special question in social science.

'Tis a Jewel.—Has the editor of *The Dominion Dental Journal* changed his opinion concerning the propriety of using proper names when referring to a brother editor? How long is it since he cried out so lustily against the practice in which he now indulges? Our withers are unwrung, but we hear the shiver of Canadian glass when he hurls a charge ot inconsistency.

DENTAL COLLEGES AND DENTAL EXAMINERS.

The following resolution, offered in the National Association of College Faculties by a member of the Executive Committee, was, after due debate, laid on the table for its final sleep.

Resolved: That we regard it as inconsistent for any member of a Faculty of any College holding membership in this body, at the same time to be a member of any State Board of Dental Examiners.

The resolution was intended for a specific application, but it failed its object. It was argued against it that a teaching member of a Faculty was, other things being equal, peculiarly qualified for such a position, as he knows what is the instruction of the schools, and he is posted as to the latest advances in educational matters. The man who is accustomed to instructing, knows best how to examine. It was insisted by some that every Examining Board should have at least one member who is a teacher.

TOO FAR FETCHED.—Two things are always interesting, the old and the new. This time we would bring under notice some cases of ancient mechanical work, which were detailed to the Rome Congress by V. Guerini, of Naples. They follow more on the lines of what is now-a-days called bridge-work, and seeing that it dates back some two or three thousand years, is just a little bit awkward for those to explain who look on the above specialty as "something quite new and quite an American idea."—*The London Dental Record.*

Some of the best of these ancient Etrurian pieces of work are in America, and they bear no more resemblance to American bridge-work than they do to dental regulating appliances. Not one of the principles upon which modern bridge-work depends for its efficiency is exemplified in the ancient specimens, and so the fling at the "American idea" is quite wide of the mark.

BAD FORM.—Some of our contemporaries have the bad habit of clipping from other journals and either giving no credit at all, or simply placing at the end "*Pacific,*" "*Western,*" or "PRACTITIONER," as the case may be. This is not very dignified or respectful. It savors too much of the vulgarian who greets you with "Hello, Doc.!" How much more decorous and polite it would be to give the proper name in full, and say "*Pacific Dental Journal,*" "*Western Dental Journal,*" or "DENTAL PRACTITIONER AND ADVERTISER." We have not a very high idea of the morality of an editor who will fail to give due credit for that which he borrows without permission. It is a most indefensible habit, and savors less of true Christianity than many of the so-called small vices.

AN ANOMALY.—The British Medical Council, which has jurisdiction over dental affairs, is not very complimentary to our brethren of Great Britain. When the dentists asked that one of their number should be appointed to the Council, one of that body remarked that he "did not think that a member should be elected to sit at the board where matters were discussed which were beyond his comprehension." But some of their proceedings would lead one to infer that the medical members do not comprehend dental affairs, and yet they not only discuss, but decide them, and that without consulting the dentists.

THE DENTAL INSTRUCTOR.—The Isaac Knapp Dental Coterie, of Fort Wayne, Ind., has issued a small illustrated volume, entitled "The Dental Instructor," full of useful information for both dentists and their patients. At the end of each chapter will be found a series of questions upon the subjects considered, and these will make it very useful for study. It might be profitably employed in the common schools.

AMERICAN DENTAL SOCIETY OF EUROPE.—The nineteenth annual meeting was held at Geneva, August 6 to 8. The following officers were elected for the ensuing year: President, Charles W. Jenkins, Zurich; Vice-President, Dr. William Mitchell, London; Treasurer, Dr. Charles J. Monk, Wiesbaden; Secretary, Dr. William S. Davenport, Paris. Executive Committee, Dr. Jenkins, Dr. C. C. Daboll and Dr. A. C. Hugenschmidt, of Paris. Membership Committee, Dr. Mitchell, Dr. L. C. Bryan, of Basel, Dr. Waldo Royce, of Tunbridge Wells. The next meeting will be held at Boulogne, the first Monday in August, 1895.

WM. S. DAVENPORT, *Sec'y.*

ON THE PACIFIC COAST.—The Mid-winter Fair Dental Congress, held in San Francisco, in mid-summer, seems to have been a decided success. An excellent report of the proceedings was published in the *Pacific Coast Dentist.* This should be followed by the organization of an Occidental Dental Association, to which should belong, as members, every progressive dentist living west of the Rocky Mountains. The movement should be inaugurated before the good effects of the June meeting shall have passed away.

DR. MILLER IN AMERICA.— Dr. W. D. Miller has been making a visit of two months in this country. His movements have been somewhat restricted, as he has been suffering from a sun-stroke from which he has not yet recovered. The most of his time was spent with his relatives in Ohio, but friends in Buffalo had the opportunity to meet him socially while he was spending a few days in the city, and he delivered an illustrated lecture at the College.

NATIONAL SCHOOL OF DENTAL TECHNICS.—The officers elected at Old Point Comfort to serve for the coming year were: President, D. M. Cattell, of Chicago; Vice-president, T. E. Weeks, of Minneapolis; Secretary-Treasurer, J. F. Stephan, of Cleveland; Executive Committee, T. E. Weeks, Minneapolis, for three years; H. W. Morgan, Nashville, Tenn., for two years; Geo. H. Wilson, Cleveland, for one year.

THE DELTA-SIGMA-DELTA.—At the last annual meeting of the Supreme Chapter, the following officers were elected: Supreme Grand Master, R. B. Tuller; Supreme Worthy Master, F. H. Zinn; Supreme Scribe, A. H. Peck; Supreme Treasurer, P. J. Kester. The order is in a flourishing condition and is promising of great good to dentistry.

UNION MEETING.—The twenty-sixth union meeting of the Fifth, Sixth, Seventh and Eighth District Dental Societies of the State of New York, will be held in the City of Buffalo, commencing on the 30th of October. A full programme has been prepared by the committee.

A GOOD THING.—San Francisco has organized a Dental Club, as a permanent institution. This should tend to promote harmony and to cultivate the social virtues. We shall knock at its doors when we visit the Pacific coast. The genial Dr. W. J. Younger is its president.

ANOTHER TITLE.—Prof. Harlan, of Chicago, may now add yet other letters to his name. This time it will be those of M. A., honorarily conferred by Dartmouth College. Hail, Master of Arts!

DENTAL LEGISLATION.—All the States and Territories now have dental laws, if we except a few like Alaska and Indian Territory, in which there are no dental societies.

THE

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AND ADVERTISER.

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W. C. BARRETT, M. D.; D. D. S.;
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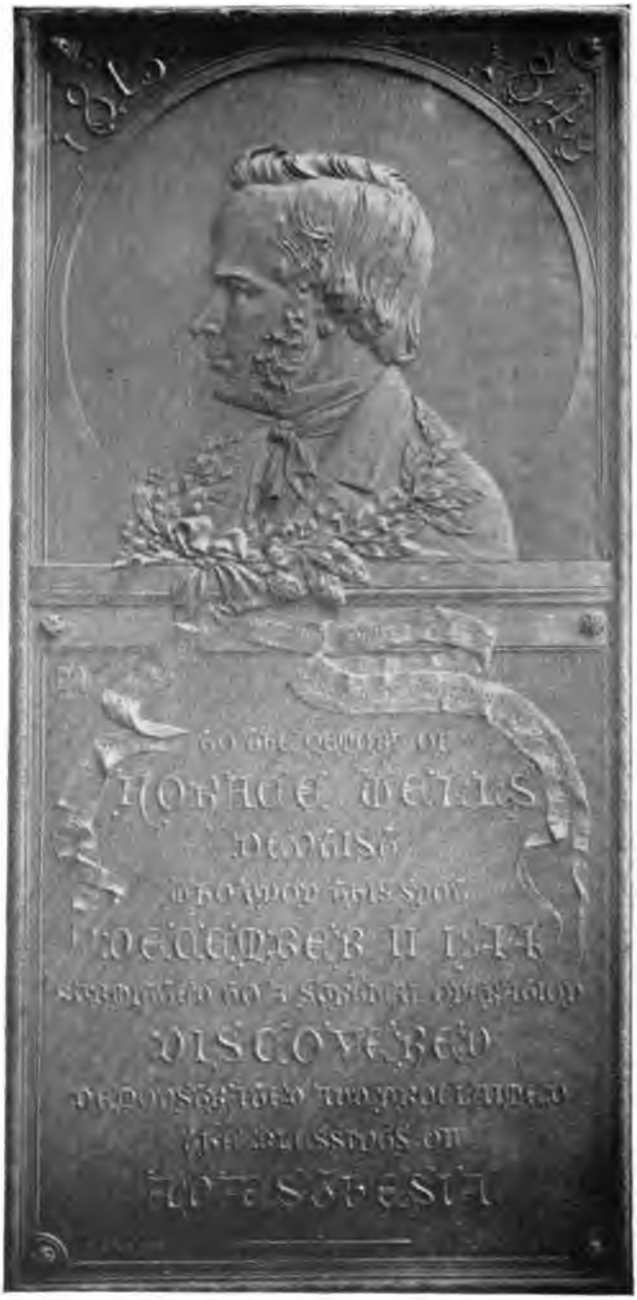

MEMORIAL TABLET

ERECTED BY THE DENTISTS OF AMERICA ON THE SPOT WHERE THE FIRST ADMINISTRATION OF AN ANÆSTHETIC AGENT FOR OBTUNDING PURPOSES WAS MADE, IN HARTFORD, CONN., DECEMBER 11TH, 1844.

THE

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THE RELATION OF NITROUS OXIDE AND ASPHYXIA.

> " Strange state of being; (for 'tis still to be)
> Senseless to feel and with sealed eyes to see." —*Byron.*

WM. W. BELCHER, D. D. S., SENECA FALLS, N. Y.

Read at the Union Meeting of the Fifth, Sixth, Seventh and Eighth District Dental Societies, held in Buffalo, October 30 and 31, 1894.

The year 1844 marks an epoch in the history of mankind. Just fifty years ago the anæsthetic properties of nitrous oxide gas were discovered. To Dr. Horace Wells, of Hartford, Conn., belongs the honor of the discovery. He was the Columbus who first dared the unknown sea, but discouraged with faulty apparatus and an incredulous public, committed suicide, not recognizing, from the island he touched, the great continent beyond.

For a period of twenty years nitrous oxide was not employed to any great extent as an anæsthetic; defective apparatus and the discovery of ether and chloroform meanwhile were the principal causes. After a time came a reaction against chloroform, as an unsafe agent, and the use of the gas in a compressed form, made possible by the invention of the "Coxeter" cylinder in 1869, established nitrous oxide as *the* dental anæsthetic.

From the day of its discovery it has been a mooted question whether or not this agent was a true anæsthetic or an asphyxiant. To the unprejudiced observer it would appear that the discussion pro and con has been decidedly in favor of the idea of asphyxia. Numerous dissections of persons dying under the influence of nitrous oxide, and many domestic animals sacrificed for the benefit of science, have tended to confirm this view. The medical profession has accepted it as an established fact. To a large number in the dental profession, however, it is still an open question.

In discussing this agent, it is claimed by the advocates of true anæsthesia that there is an atomic separation of the elements of nitrous oxide, and that free oxygen and nitrogen each exerts a special influence in the production of the anæsthesia. In short, that nitrous oxide produces its effect by an overstimulation — an excess of oxygen in the system. On the other hand, the possibility of a separation of the elements of the gas at the normal temperature of the blood, 98 degrees F., is positively denied; the nitrous oxide giving up no oxygen to the blood or tissues, the gas becoming rapidly diffused and replacing the oxygen in the lungs.

Some writers go so far as to claim that this is not only true of nitrous oxide, but of all anæsthetics. The agent, whatever it may be, gradually replaces the air in the lungs, and a state of asphyxia results. However, it is not my purpose to prove that *all* anæsthetics are asphyxiating in their action. My observations in this article are confined strictly to nitrous oxide.

No other anæsthetic is so pleasant in its effect. During a series of experiments I became almost habituated to its use. Nothing could be more fascinating. Away with your opium, morphine, cocaine and whiskey! To lose yourself in sleep, a dreamy listlessness stealing gradually over you, a glorious sensation of "letting yourself go" — the tremendous exhilaration of the gallop. The mind is supreme; thoughts seem to flash through the brain at lightning rapidity; every sound is echoed — re-echoed; one thought gives place to another; the same thought is remembered — remembered again; the past, the present, the doings of the day rush before you. The gas seems sweet and thick, growing thicker and thicker, until it might be a solid — a substance capable of mastication. There is an increased flow of saliva, eyes open, the sight grows dim, until unconsciousness ensues. After a time, the murmur of voices comes to you like the fanciful speech of a dream. How the wagons rattle over the pavements! echo — re-echo. Only one, say you? Surely there must be a dozen. How sweet the air; how refreshing. "To appreciate heaven, you must be in hell awhile," says Carleton. Still, after all, the experience is not altogether unpleasant. The unusual sensations enjoyed, and the pleasure of discovering yourself alive and breathing God's free air, more than compensate for your sojourn in the debatable land that lies between unconsciousness and death.

It is generally admitted that in producing unconsciousness nitrous oxide gives many of the symptoms of asphyxia — the quick and labored breathing; the increased rapidity of the pulse; the capillaries surcharged with discolored blood; the purple, aye, the black condition of the features under prolonged anæsthesia — these are all symptoms of asphyxia. We are all anxious to consider nitrous oxide as absolutely harmless; the fact is, we lie so often to our patients, that we come after a time to consider it like unto Cæsar's wife — "above suspicion."

To be sure, there have been comparatively few deaths, and it cannot be said that every death is due to the anæsthetic. Sudden and unaccountable deaths during surgical operations were not unknown before the advent of anæsthesia. Never a death, however, but the journals come out in force to defend the unlucky operator — "heart failure," "œdema of the lungs," "accidental smothering," etc. It wasn't asphyxia! O no, of course not! It couldn't be!

> "When fiction rises pleasing to the eye,
> Men will believe, because they love the lie;
> But Truth herself, if clouded with a frown,
> Must have some solemn proof to pass her down."

In the course of a series of interesting experiments to determine the effect, if any, of the will power and physical condition on the amount of gas necessary to produce the anæsthetic effect, I was tempted to try the experiment of breathing and re-breathing the same air. For this purpose an ordinary gasometer was used, the air being expired into the holder, and taken again into the lungs. The effect and the similarity of the symptoms to those produced by nitrous oxide were, to say the least, surprising. You will find yourself slowly losing control of your actions; a numbness stealing gradually over you; the sounds are re-echoed. At first, you would dearly love to take a full breath of air; *now*, it is a matter of indifference whether you breathe the fresh air or the contaminated atmosphere, which seems to be thick, a substance to be weighed and measured. A few more inspirations and you are unconscious. I have done this not once, but many times. *Every sensation was identical with that produced by the inhalation of the gas*, even to the stertorous breathing. It is not claimed that producing unconsciousness in this manner is either new or novel. Indeed, it is most ancient, the inhaling of carbonic acid having been used by the early Egyptians to produce unconsciousness. It is no more nor less than carbonic acid poisoning. Speaking in the generally accepted meaning of the term, it is none the less asphyxia.

The word asphyxia, in its literal acceptance, was applied in days gone by to every state of apparent or real death in which there was a primitive absence of pulse and cessation of beating of the heart. The ancients were unacquainted with the composition of the atmospheric air, or the theory of respiration as at present understood, and for a long time asphyxia had no other meaning than that of *pulselessness*. Since the action of the heart continues in asphyxia after the cessation of all other vital phenomena, it is evident that the word asphyxia is an improper expression.

Asphyxia may be confounded with apnœa, suffocation, syncope, shock, dyspnœa, and other disorders of respiration. Poisoning by toxic vapors, the fumes of sulphuric acid, mephitic gases in general, and those produced by burning charcoal (carbonic oxide, CO) do not constitute asphyxia, in the literal acceptance of the word. They are, in fact, true poisons, resembling narcotic poisoning.

Thus, we see that carbonic di-oxide, commonly called carbonic acid (CO_2) is a poison, not a true asphyxiant. The word asphyxia, however, is so broad that in the general acceptance of the term it may be so considered. Carbonic acid is ever present in the atmosphere. Not a natural constituent, it is supposed to result from volcanic eruptions; about .04 is the usual percentage. It is ever present in the exhaled air; air once breathed contains about four per cent. of carbonic acid. An addition of from five to ten per cent. is sufficient to make it irrespirable, and cause death. Elaborate experiments have proven that the amount exhaled is modified by rest, position, time, age, climate, work, food, sex and temperament; that it is poisonous to man when taken into the lungs, but introduced into the stomach it is rather beneficial and refreshing. It forms a constituent of aerated beverages of all kinds. Mineral water, soda, beer and sparkling champagne, all owe their refreshing qualities to the presence of carbonic acid, without which they would be dull, tasteless and insipid. Carbonic acid gas has been used from time immemorial as a local anodyne. The familiar yeast poultice owes its virtue to the local anæsthetic effect of this gas.

It is a matter of interest, with the deluge of "patent" local anæsthetics at the present time, to find that hypodermic injections of carbonic acid produce local anæsthesia.

To return to our subject: As another interesting experiment, turn into the gasometer a small amount of nitrous oxide, say a gallon or two; breathe the same until the gas is consumed. Breathe next into the gasometer, using the same air over and over. You will have, without interruption, a continuance of the anæsthesia, and exactly the same train of symptoms as with the nitrous oxide alone. Try still another experiment: Breathe the same air over and over as before; when you begin to feel the effect, turn a small amount of nitrous oxide into the gasometer. You will find that ofttimes one gallon is sufficient to produce unconsciousness—all the symptoms, the effect, absolutely the same as when nitrous oxide alone is employed.

I have tried these experiments, and many others of which I will not attempt to go into detail, not once, but many times, and can arrive at but one conclusion—that asphyxia, or carbonic acid poisoning, call it what you may, and the effect of inhaling nitrous oxide, are one and the same. I do not expect that the inhaling of an atmosphere surcharged with carbonic acid will ever take the place of nitrous oxide. The gas is far more pleasant in its action. It must possess other virtues that make its asphyxiating effect more pleasant, a most charming method of smothering. That its nature being asphyxiating, it *is* dangerous to any one having heart or lung trouble, no one will deny. Another fact — it takes much less effort to produce unconsciousness when gas is employed late in the day; when the vital forces are low, and the patient will complain of "an - all - tired - out," "Hood's - Sarsaparilla" feeling, and you will find two - thirds the amount of gas usually employed sufficient.

I have heretofore followed the generally accepted practice of preferring to have the patient early in the morning, fresh and unwearied from the cares of the day. Undoubtedly this is an advantage when you have a very nervous person to deal with, and the thoughts of the operation make him completely unnerved; but when the patient is not afraid of the gas, I would prefer late in the afternoon. Many cases have come under my own observation in which the same patient required three or four gallons more gas in the morning than the previous afternoon.

A word in regard to our apparatus: The nice checked red-and-blue cloth-covered tubes commonly used are a nuisance, a delusion and a snare. The cloth only serves to cover the imperfections of the rubber. Some time when you have a dull day, carefully examine the tube you have been using for four or five years, count the imperfections, and then wonder at your ill success. A *plain* rubber tube is much better, the rubber stretched *over* the inhaler and *over* the opening from the receiver. Our inhalers have too many joints, too many chances for leakage.

In conclusion: Gas carefully administered is the safest agent in use for producing unconsciousness; it *is* asphyxiating, and should be used with caution. Remember that life rests upon a tripod, formed by innervation, circulation and respiration, and the reciprocal action of these functions are demanded for the maintenance of life, death ensuing upon their cessation. No man has the right to jeopardize the life of a fellow-being for a minor operation, such as the extraction of a single tooth.

The late Dr. Atkinson once said of anæsthetics, "they are of the devil," and he came very close to the truth. Remember that

> "Sleep and death are twins of winged race,
> Of matchless swiftness, but of silent pace."

RUBEFACIENTS AND VESICANTS.

BY A. W. HARLAN, M. D., D. D. S., CHICAGO, ILLINOIS.

Read at the Union Meeting of the Fifth, Sixth, Seventh and Eighth District Dental Societies, held in Buffalo, October 30 and 31, 1894.

When I was urged to present a short paper to the members of this gathering, I did not fully make up my mind to write upon the above topics, as I had something more practical on hand, but after a time I concluded that occasional practicability was all that was needed to make some subjects interesting.

You are asking of what value to dentistry a consideration of reddening and blistering will be to busy practitioners? I will try and answer your question. There are many conditions requiring the use of a rubefacient, and not a few where a blister is of immense value. It is not necessary, and it would defeat the effect of these brief notes, if an attempt was made to write a full paper on counter-irritation. My opinion is that rubefaction and vesication, as remedial measures, are not taken advantage of by dentists sufficiently often to make them familiar with their objects in medicine.

What is a rubefacient? This is the definition of Dunglison: "Rubefacient; producing redness, a medicine which produces redness of the skin. The action is called rubefaction, a gentle, local, irritant. Vesicant; a blister, vesication, the action of a vesicant, the formation of blisters, vesicating blister, epispastic. Blister; vesicle or vesication, from vesicatories or other causes, also vesicant, vesicating; a blister plaster, substance which when applied to the skin irritates it and occasions serous secretion, raising the epidermis and inducing vesicles, as cantharides, mustard, ammonia, etc. Blisters are used as counter-irritants. A blister applied for a few hours to produce this effect is termed a fly blister. A perpetual blister is one kept open by appropriate dressing." The latter definition is also from Dunglison. Perhaps the simplest case of dental disease is pulpitis. Of what value would rubefaction be to the patient? Local anodynes and even local anæsthetics often fail to give relief, and the pulp is doomed to die from lack of appropriate measures. In many cases of this nature the application of hot water to the neck and above the ear on the affected side, by means of a few thicknesses of heavy towelling (six or eight thicknesses) soaked and partially wrung out, will prove efficacious, if continued from five to ten minutes. In nearly all cases of pain around erupting third molars, the use of water about 120° F. to 130° F., covering an area of from four to six inches from the focal point, will give the necessary relief in a few minutes. The direct application of a small jet of water in the mouth on the inflamed surface is both painful and injurious, as gentle unloading of the engorged vessels is not accomplished in this manner.

For minor ills of the gums (in pyorrhœa) rubefaction may be accomplished without vesication, by using a saturated solution of menthol in alcohol, or even less than this, down to a ten-per-cent. solution. Oil of peppermint, oil of turpentine, or oil of cloves will produce reddening, and when used over a large area will often so alter the blood current that there will not be anything more than swelling, without suppuration. Rubefaction may be produced with chloroform, camphor and aqua ammonia. Mustard and capsicum are also used for this purpose. It must be remembered that the object of rubefaction is to draw the blood from a circumscribed inflamed area, and fill other unstimulated points, giving nature an opportunity to recover. I have been surprised and grieved to find that rubefaction is practiced on too small a territory, not sufficient to give the desired relief. Estimated that an inflamed spot is one-half inch square, the rubefacient should cover ten times this area *in a locality which will direct the flow of the blood elsewhere* and relieve the tension on the arteries or arterioles. In acute pericementitis, in addition to rubefaction it may be necessary to produce vesication—blistering. Many agents are used for this purpose, none of them very nicely or in appropriate places. A blister to relieve pericementitis in a superior central incisor should be made over the roots of the bicuspids, and the gingival margin of the gum, around the central incisor, should be painted at the same time with compound tincture of iodine. The blood supply will be deflected and the resolvent effect of the iodine will soon be felt around the apex of the root. The gum must receive at least two paintings. This rule applied to all such cases will give much cause for congratulation from your clients. Ammonia, capsicum, cantharides, or black mustard oil will produce blisters. Carbolic acid will produce a poor blister. Do not use zinc chloride for this purpose. A blister will do no good after the formation of pus around the apex of the root. Rubefaction may do something to alleviate the pain, but a blister increases it. Rubefaction and blistering for inflammation of the gums and the peridental membrane, facial neuralgia, as well as the pulp of a tooth, will be more efficient than leeching and purging.

A modification of Mayer's hammer may be used with good effect for rubefaction. Mayer's hammer is a steel disk dropped in boiling water before it is used on the mucous membrane or the skin. The one I use is about the size of a copper cent, and twice as thick, with a handle that is screwed into it while it is in the water; by applying this gently over three or four inches of space, great reddening is produced.

What the patient needs is a new sensation; this he gets with a blister or a rubefacient. When you are about to produce rubefaction or vesication, do it with your whole soul. Do it well; do not be afraid. Use blisters in inflammation, and rubefacients in congestion or stagnation. An ugly blister is not needed, as it will cause sloughing, and this is unnecessary around the mouth or on the face.

◆

HYPODERMIC MEDICATION.

BY W. W. COON, D. D. S., ALFRED, N. Y.

Read at the Union Meeting of the Fifth, Sixth, Seventh and Eighth District Dental Societies, held in Buffalo, October 30 and 31, 1894.

Hypodermic medication has a wide range of usefulness in general medicine, and can be used to great advantage in dental practice, not merely through the employment of anæsthetic remedies, but for systemic effects, that if not absolutely essential, are still very desirable in special cases. When we require immediate and radical medication, the hypodermic syringe affords the surest and quickest means of obtaining it. For this reason I bring to your attention a few remedies that are not in such common use in dental practice as their merits warrant. These hypodermic, or more properly speaking "hypodermatic," tablets are a most convenient and certain way of administering drugs by the mouth; so that what may be said of them hypodermically will apply equally well when they are used without the syringe, only remembering that, according to Bourneville and Bricon's manual on hypodermic medication, the activity of nearly all drugs, more especially of narcotics and those that possess direct action on the great nerve centers, is from three to five times as great when administered hypodermically, and about twice the time elapses before the effect is expressed when given by the mouth.

In the minds of most patients, the sight of a hypodermic syringe in the hands of a dentist, or physician, for that matter, is followed by the idea that either a local anæsthetic, or morphine is to be used; but this thought is easily dispelled by a few well directed remarks that do not savor too much of preconceived deception. I do not find it necessary always to say what the remedy is that I propose to employ, but usually suggest the effect it is expected to produce. The few drugs considered in this paper are: Caffein, strychnine, nitro-glycerine (which can be spoken of as "glonoin" if your patient is apprehensive), ergot, morphine, cocaine, atropine, apomorphine, and hyoscyamin. I allude to the latter only to condemn it as producing a most uncomfortable condition. Its use would be indicated in neurotic patients with a superabundant secretion of saliva, but for the very unpleasant, dry throat it produces. It is an anti-spasmodic, lowers the pulse rate and frequency of respiration, and is used in general medicine, perhaps, most for chronic mania and delusional insanity. It is a mydriatic, dilating the pupil sufficiently to be of use in opthalmic practice.

Apomorphine I have never used, and hope it may be a long time before I am required to. I have it in the office for use only as an emetic, as when given hypodermically it acts freely, when emetics by the mouth fail.

Atropine is especially useful in combination with morphine. Shoemaker says: "Belladona is chiefly employed internally to alleviate pain, relax spasm, and check excessive secretion or morbid discharge, and it is a valuable remedy in neuralgia, especially of the trifacial nerve, though other forms are frequently amenable to its influence." Thus, combined with morphine, it is indicated in chronic alveolar abscess. When an abscess is too far along to abort, this combination of drugs may be advantageously injected into the abscess, when the pain will be stopped within a few minutes, not to return for several hours, and even then much mitigated, while the amount of pus formation is lessened considerably. You ask why inject into the abscess, or as near its site as practicable? There are three reasons—one of major, two of minor consequence.

First.—When I use morphine I do not care to advertise it to the patient, and in these cases when I use it at all I employ it as a local anæsthetic, and the laity are just now educated to the expectation of almost any result from a local anæsthetic, and used in this way there is no possibility of forming the morphine habit.

Second.—The vascularity of the oral cavity quickens its absorption and enhances its effect; this is of minor importance, as is also the third reason, which lies in the idea that its use in an ulcer or abscess is an advantage to the diseased tissue.

Most gratifying results are obtained by the use of small doses of the drugs, especially if not acquainted with the susceptibility of the patient, who is liable to present an idiosyncrasy that will cause a reasonably small dose to result in nausea, giddiness, etc. When such a result obtains, caffein is especially useful in combating it, as it is a physiological antidote, though not a complete one. Caffein may also be used to great advantage for a depression following the use of nitrous oxide gas, as it counteracts the effects of narcotic remedies and stimulates the cerebral functions. It would be good for us all to take after a banquet, as it dissipates the drowsiness produced by a hearty dinner. It is useful also in hemicrania and neuralgia, reduces respiration, lowers blood pressure and diminishes temperature. Its primary effect, however, is a slight increase in temperature. Caffein is closely related to cocaine, both in chemical composition and physiological effects. It is a local anæsthetic, and is regarded as an efficient one by Fauvel and Touret.

Of cocaine so much is said that I will speak of it but little, simply calling attention to the conclusion of M. Thoily Regard's article on cocaine anæsthesia in the August, 1894, number of the *Journal of the British Dental Association.*

"Before we leave cocaine, perhaps it would be as well to touch upon a side of the question somewhat neglected, namely, its effect upon the genital organs. Many observations have placed beyond a doubt the exciting effect cocaine has upon the sexual organs. A Canadian doctor, M. Cornell, has recorded the case of a young girl, 16 years old, on whom an injection of a weak solution of cocaine had been made for the extraction of a tooth. The injection produced an erotic excitement, under the influence of which this young person threw herself into lascivious attitudes and gave vent to obscene words.

"A doctor of Philadelphia, having made an injection of a few drops of a ten per cent. solution of cocaine on a lady ordinarily very reserved, was surprised to see her suddenly become quite erotic, and conduct herself in a manner absolutely indecent. A dentist of St. Paul records an identical case. I have myself experienced some cases of excitement in the genital parts, with both sexes. For instance, in the month of December last, a lady confessed to me having felt the same state of sexual excitement as that which she had experienced a few months before in the surgery of a gynæcologist, by whom she had been put under ether. From that moment I have avoided being alone when using cocaine, and I think every dentist, careful of his reputation, should obtain the cooperation of an assistant when obliged to use cocaine injections and to operate upon the female sex."

Strychnine represents the medicinal activity of *nux vomica.* It is a stimulant to the respiratory center, also to the heart and vaso-motor centers. It raises arterial pressure and the pulse becomes slower. Is a mydriatic—that is, dilates the pupil.

Its usefulness in dental practice is for surgical shock. In Shoemaker's *Materia Medica and Theraputics* we find him saying that "strychnine is one of the best of cardiac stimulants in failing heart or weakness of the circulation. Prof. Thos. A. Morton uses it in surgical shock. Weakness of the heart, due to depressed nerve-force, and dilation of the heart are materially benefited by strychnine." The muriate and nitrate are more active than the sulphate. Brucine, another alkaloid of *nux vomica,* has in general the same physiological action as strychnine, with local anæsthetic effect superadded, according to Bourneville and Bricon. This last mentioned drug I have never used.

Strychnine is much used in the "jag cure," as it diminishes the craving for drink, and affords support to the system when the accustomed alcoholic stimulus is withdrawn. Tannin is the chemical antidote for strychnine.

Ergot is of use to us in excessive hemorrhage, following extraction. In cases of hemorrhagic diathesis it is invaluable. In fluid extract or tablets of ergotine, its injection causes pain and local irritation, but it may be given hypodermically by use of ergotole tablets, which represent all the active principles of ergot in a very concentrated form, and are free from inert and irritating constituents. It has a selective action on all sphincter muscles, causing them to contract, thus lessening the caliber of the blood vessels, reducing congestion, and stopping oozing hemorrhage.

Digitalis may be employed to advantage in combination with ergot in hemorrhagic diathesis, as it slows and steadies the heart's action and contracts the caliber of the blood vessels, and is useful, also, in cases of surgical shock or syncope.

Nitro-glycerine is of use in threatened death from chloroform or nitrous oxide narcosis, and in all cases of heart failure. It is much used in collapse, surgical shock, etc. Its effects closely resemble those of amyl nitrate, but are more persistent. It is useful in hysteria, hemicrania and angina pectoris. It is a physiological antidote to cocaine, and served me well in the only case I ever had of toxic effects from that drug, which was from a small dose, and was undoubtedly caused by idiosyncrasy of the patient. Its injection was alternated with dilute alcohol, which is also a physiological antidote for cocaine.

The perfect cleanliness of a hypodermic syringe is imperative. With this condition obtained and the use of freshly boiled water for making solutions for immediate use, there is no valid objection to the use of medicines in this way. Ordinary care and the skill that comes from practice, enables one to insert the needle with little or no pain. The only slough or abscess I have ever seen from the use of the syringe has been where some irritating substance was injected into dense gum tissue.

The easiest and best place in the oral cavity to inject is under the mucous membrane, just above where it is reflected from the superior maxilliary gum border to the inner side of the cheek. Here the needle goes easily and absorption is very rapid. There may be occasional indications for the exhibition of some of these drugs when operating for hypersensitive people of low vitality, that the system may be rendered less sensible to nerve shocks.

Do not let me be understood as recommending the use of narcotics, for a little indiscrimination in that line may cause a great deal of trouble.

WHY NOT HAVE COUNTY SOCIETIES?

BY DR. M. H. FISH, NEW BERLIN, N. Y.

Read at the Union Meeting of the Fifth, Sixth, Seventh and Eighth District Dental Societies, held in Buffalo, October 30 and 31, 1894.

The knowledge that an immense amount of good has been done to the dental profession (and thus indirectly to the public) by the organization and maintenance of State and District societies, has led me to believe that still more might be accomplished by forming County associations. The fact that a very small portion of those in practice ever attend a dental convention should be a sufficient reason for discussing this question.

In the Sixth district, I believe, we have over two hundred dentists in practice at the present time. Out of this number about forty or fifty are members in good standing of the society in that district. We are all agreed that this is not as it should be, but how shall we secure their attendance. I believe that if a proper effort should be made, nearly every dentist could be induced to join a County society; and when many of them are once in a meeting, and the ice broken, the attendance at our District conventions would be much larger. Unfortunately, the profession is dishonored by those whose self-esteem is so great that such attendance is looked upon as a useless waste of time and money.

This class is not (as might be supposed) exclusively made up of old fossils, but many of our young men, fresh from college, prefer rather to advertise some specialty, than to belong to a dental society and respect the code of ethics. They have secured their diploma, and think there is no more for them to learn.

The present and prospective condition of the dental profession is a subject of some concern to those who feel a true interest in its welfare. Dr. R. S. Whaley, in a paper read before the South Carolina Dental Association, several years ago, very truthfully says: "The principles of association are so obvious as to need but little comment or explanation. History proves conclusively the power of combinations. In no previous age have associations progressed so rapidly and taken so deep a hold upon the public mind. Men have learned what wonders can be accomplished in certain cases of union, and seem to think that combination is competent to accomplish anything. You can scarcely name an object to attain which some institution has not been formed. Would men spread one set of opinions and crush another, they form a society. Would they encourage agriculture, manufacturers, or science, they make societies. We have numerous institutions spreading over the country, combining many for special purposes. We have minute ramifications of these societies penetrating everywhere. Why not in our organization? Association, unity and harmony, have ever proved a most formidable bulwark for civil and religious liberty, and as well have developed improvement in the scientific and intellectual world. If the interest and dignity of a profession and its standard of excellence are to be elevated, it is most important that a laudable emulation be encouraged among its members, to incite them to an earnest inquiry, and a progressive individual energy. These are the elements of improvement and success."

A cordial cultivation of the higher powers of the mind, and nobler impulses of the heart, through an intimate acquaintance and friendship of the members of our profession, one with another, is the surest method of opening the way to dignity and manhood.

Professions are not made; they grow. They may be characterized as creatures of circumstances and conditions, and require nutrition of a substantial character to secure their development, just as does any vital organism. You are all familiar with certain laws regulating the practice of dentistry, that were put upon our statute books a few years ago, and since often revised, and know that this was an important step in the right direction. Yet there seems to be need of something more, as the number of men traveling from place to place, advertising "painless dentistry," "teeth without plates," and other specialties, seems to be on the increase. I am sorry to say that a large number of this class are men who have a college degree.

Now, if by organizing County societies we can induce more of our profession to confer with each other, and respect the code of ethics, would it not be another long step in the right direction? Would it not bring our associations more palpably before the people? I believe that by the exercise of a proper amount of zeal and energy, County associations would not only prove successful, but would be a triumphant vindication of all that has been claimed with regard to the benefits resulting from the formation of District, State and National associations.

In conclusion, I wish to quote from two articles in *The Cincinnati Lancet-Clinic* of October 13. Although intended for medicine, they apply equally well to dentistry:

"Formerly, practitioners of medicine found it necessary at intervals to return to the lectures and clinics of the medical schools to acquaint themselves with the recent advances in the various departments of our science, and keep abreast with the rapid progress made by the profession. Now-a-days, the medical societies have become the great post-graduate schools of the profession, and it is here that the busy practitioners in general medicine and general surgery meet with specialists in the various branches, and they interchange views and follow the rapid progress in the various departments of medical science and art. * * * The exceeding importance of medical societies to physicians cannot be over-estimated.

Medical science is forwarded by a dissemination of opinions, based upon clinical observation and laboratory research. * * * Socially, such meetings are always advantageous. * * *

"These reasons pertain to the medical profession alone, and yet the seeming secondary advantages are of even greater importance to the general public. It is the people who are the greatest benefactors from medical society meetings. Through these gatherings they come to see who are the men of professional integrity, and professional capability. As the occasion of such meetings is noted, it is observed that charlatans and quacks are not contributing to the sum of that medical knowledge which constitutes the art and science of medicine.

"The local county or town society is the most important of all medical organizations. It is here that fraternal, neighborly relations are established. This is so well recognized that it may now be said that nearly every county in the United States has its local medical society. These home organizations should be branches of, or auxilliary to the State organizations, and in these societies (the County and State) every reputable physician should have his name enrolled as an active member. The societies can easily get along and prosper without the membership of any one, two, or a dozen men. On the other hand, no physician can, in these days of close communication, do himself or his patrons justice by remaining without the society fold. No matter who the man may be, he cannot afford to stay out and flock by himself. Wherever there are such men, let them at once, in the beginning of the winter's work, take such measures as will place themselves in professional and social touch with their confrères."

THE PREPARATION OF CAVITIES FOR GOLD FILLING.

BY F. E. HOWARD, M. D. S., BUFFALO, N. Y.

Read at the Union Meeting of the Fifth, Sixth, Seventh, and Eighth District Dental Societies, held in Buffalo, October 30 and 31, 1894.

In the consideration of the preparation of cavities, I can introduce but a few special cases, as the field is so wide that more could not be undertaken at a meeting like this. Let us suppose, in all cases, that the rubber dam is in position, and the surrounding surfaces dry.

We will first select a superior bicuspid, with a defective sulcus, that requires to be traced out and filled with gold. We will suppose that the decay has not extended very deep, or to have involved any complications. The first step would be to introduce a small bur (my choice would be an inverted cone), and to force this well down to the bottom of the cavity, carry it forward or backward upon the floor, and bring it to the surface repeatedly in the endeavor to open a channel below the enamel margin. Blow the *débris* from the cavity with an air-syringe, from time to time, so that the outlines may be distinctly seen. Now change the small bur for a cross-cut fissure bur of proper diameter, introduce this at the central portion, and with one or two sweeps the rough edges are removed and the general shape of the cavity is established.

We desire, in this instance, to have a generally flat or concave floor, with walls perpendicular to it. The extremity of the sulcus need not necessarily be of the same depth. One or two shallow grooves will insure anchorage, and with the marginal edges beveled, the preparation is complete. In manipulating the fissure bur for counter-sinking, hold it at an angle of about forty-five degrees from the position at first given. Then, by sweeping it around the edges, at the same inclination, the margins are properly counter-sunk; or this may be accomplished with finishing trimmers, files, etc. The cavity is now practically ready for the introduction of the filling.

If I were to prepare an ordinary coronal cavity in an inferior first molar, I should open up the cavity in the same general manner as that just described, except that I would use the burs in the right-angle attachment of the engine. In these teeth, we usually have a central cavity, and radiating in four directions from that are fissures. By introducing the bur in the central cavity, it may be carried back at the depth of decay under the enamel and brought to the surface, repeating this until the channel is opened up as far as the extremity of the fissure. Returning to the central portion, the second fissure is opened up in the same manner, and this is continued until all are completed. The chip-blower must be in constant requisition to keep it clean. With a chisel and the cross-cut bur, the angular portions are removed, the edges are counter-sunk, and the proper outlines given to the cavity. Again we have the flat or concave floor, the side walls perpendicular to it, and at one or two points slight under-cuts to retain the filling. The extremity of the fissures need not be as deep as the central cavity, unless the decay is deep.

Should it occur that in the cavities described we have extensive decay, the procedure will be a little different. The first opening up of the cavity may, perhaps, be accomplished more successfully with chisels, by breaking down the weak surfaces of the enamel until the orifice is nearly as large as the interior. After giving desirable outlines to the cavity, the burs can then be successfully used. The same care of side walls, floors of the cavity, etc., should be observed that has already been recommended. We may find at one or two points deep under-cuts, with strong overhanging enamel. It is not always necessary to cut this down, for the portion of the cavity beneath may be so lined with zinc phosphate as to give it complete support, and this will enable it to withstand all masticating force, and at the same time give better outlines to the cavity and filling.

In preparing labial cavities, a symmetrical outline may be obtained with a bur-wheel extended to the healthy enamel margin. The floor should be fairly flat, with vertical side walls. The marginal edges should be beveled or counter-sunk, and retaining grooves cut at two or three points, or if very extensive, the groove may extend nearly or quite around the cavity. If the filling is made to extend a little above the gingival margin, it is less likely that secondary decay will occur. In other words, a weak enamel gingival border is not advisable, and should be cut away to the cementum line. The same rule should be observed in preparing all buccal surface cavities.

In preparing proximate cavities of medium size in the superior central incisors, it is taken for granted that sufficient separation has been previously secured. With thin enamel chisels, remove the angular part of the tooth bordering on the palatal surface, to facilitate proper approach to the cavity, so that it may be excavated and filled from that direction principally, as such operations not only preserve the appearance of the tooth more perfectly, but are more serviceable. When the general plane of this surface is given with the chisels, the next step should be to remove a portion of the decay with a spoon-shaped excavator, and two or three sweeps of the instrument will accomplish this. Next, with an emery or corundum strip, lubricated by drawing it across a paraffine block, dress down the margins until they are smooth and even. By further removal of decay, we are enabled to determine what will be the outlines of the cavity. If large, and the walls thin, it will be necessary to rely for the retention of the filling upon the cervical portion of the cavity exclusively.

With a pointed chisel, we may secure anchorage at the labio-cervical angle in the following manner: When we have decided upon the depth to go in this direction, a groove should extend from the extremity of this angle in the direction of the incisive edge, cut in the dentine, if possible. This should extend down as near the incisive edge as possible without weakening the centro-labial portion of the tooth. It is sometimes desirable to obtain further anchorage in the opposite direction. This may be secured with the chisel just described, aided by a bur and a hatchet excavator turned at an angle of forty-five degrees from the handle. We may cut from the central portion of the cervical wall in the direction of the palatal angle to the desired depth, a groove from the extremity of this angle upon the palatal wall in the direction of the incisive edge. We now have a V-shaped anchorage in this locality, which, together with the one in the opposite direction, gives us retention for our filling that is entirely reliable, without an under-cut at the incisive edge. The latter would only weaken the operation, without adding to the security of the filling.

Should these cavities be comparatively small, and the teeth thick, it might be desirable to have a slight under-cut in the direction of the incisive edge. A sand tape, lubricated and drawn over this surface, will bevel the marginal edges sufficiently. When, from any peculiarity of shape, this can not be accomplished, it may be done with enamel-finishing instruments.

Proximate cavities in superior bicuspids may require to be made compound. The weak, imperfect wall of enamel over-hanging the proximate portion, may be cut down with chisels. After a moderate sized opening is effected in this driection, a cross-cut enamel bur will enable us to open up the cavity yet further. At this stage, we will remove the decay from the cavity by the aid of spoon-shaped excavators and the chip-blower, noting the extent of the decay and the character of the rough marginal edges remaining about the outline of the cavity. The buccal, palatal and cervical walls are cut down with a chisel, and where it can be accomplished it is desirable to carry the cervical portion of the cavity above the gingival margin of the gum, as a safeguard against secondary decay. The side walls and the cervical portion should be left vertical to the floor or plane of the cavity. The sulcus must be traced out and included in the cavity. The bucco-palato proximate angles, in the direction of the coronal aspect, must be widened out so as to leave a dovetail, triangular space, which largely serves as the anchorage for the filling. This latter operation is best accomplished by the aid of cross-cut burs, together with enamel finishing burs. To secure anchorage cut in at the bucco-palato-cervical angles, after giving this portion of the cavity proper depth, which will be determined by the character of the gold which we propose to use, and the manner of its preparation ; a groove in the dentine, if possible, should be cut in the direction of the coronal portion of the cavity. The cervical margin should be made nearly flat, transverse to the floor or general plane of the filling, with perhaps a slight dipping in at the bottom ; when the marginal edges are nicely counter-sunk the cavity is ready to fill.

Proximate cavities in superior molars do not differ very widely from those in the bicuspids. The general preparation, opening up of the cavity, shaping of the lateral and cervical walls, are almost identical. I need only call your attention to one point of difference. In the superior molars we have two depressions in the coronal surface. It will often occur that if the proximate cavities are at all large, they will encroach upon these depressions so far that one may be necessarily included in the operation, and where we desire to make quite an extensive contour filling, we may leave the bucco-palato coronal angles of the side walls stronger by depending largely for our anchorage in the coronal portion of the tooth, avoiding the necessity for dove-tailing at these angles, which are sometimes weak when the decay is extensive. If, now, the proper outline is given to the buccal, palatal and cervical walls, we may obtain anchorage in the same general manner as in the bicuspids. With the marginal edges nicely counter-sunk by the aid of chisels, enamel finishing instruments, etc., the cavity is completed for filling.

CHOICE OF FILLING MATERIALS, AND METHODS OF USE.

BY EDWIN DAY DOWNS, D. D. S., OWEGO, N. Y.

Read at the Union Meeting of the Fifth, Sixth, Seventh, and Eighth District Dental Societies, held in Buffalo, October 30 and 31, 1894.

In this symposium, choice of filling materials succeeds the preparation of cavities; but, probably, in the majority of cases, the material has been decided upon before the preparation, for the opening, shaping and retaining features must be largely guided by the material to be used. Of course, the first material suggested is gold; that is the one that possesses the most desirable qualities for a durable filling. Other materials have valuable features that gold does not possess, but they are also found lacking in important qualities, thus leaving gold pre-eminently the material that should first suggest itself.

Accepting gold, then, as the most desirable for so-called permanent fillings, (I think durable would be a better word, both in our literature and in contact with our patients,) any deviation from its use must be guided by the conditions or circumstances which present themselves in a particular case. In the time at my disposal, I can hardly present all these, or dwell at great length on those I do present. I can only hope to press the button, and let you do the rest—in the discussion.

The first reason for deviation that I would suggest, is the skill of the operator. It is the duty of every dentist to know and appreciate his own limitations, and he should let no desire for fee tempt him to overstep that line. If you find you can not make good, durable gold fillings in distal cavities of molars, don't try, but use a material that you find is durable, for the first duty to your patient is conservation of the organs presented for your care. In the discussion, some one may say such a man should abandon dentistry, but the problem of self-maintenance is such that we are not throwing away vocations as we would waste-paper. So, I say to you, if you are young and find yourself environed by these difficulties, go into the laboratory and practice every day on extracted teeth, properly set in plaster; attend dental meetings; seek counsel from those of more experience, and time will enable you to do what now seems impossible. To those too old to learn, I say use that material that in your hands will preserve the teeth and health of your patients, and do not sentence these organs to the forceps, or even golden caskets, to satisfy your vanity or fill your purse.

The personal equation being eliminated, the skill of the operator unquestioned, I would next suggest the general health as an important factor. To be so wedded to gold as to impose long, painful, nerve-racking operations upon those of delicate physical organizations, or, worse yet, suffering from nervous difficulties, seems little short of criminal, and liable to cause serious injury.

Liability to recurrence, as indicated by the quality of the teeth or conditions which present themselves in the mouth, is another reason for deviation that may be generally recognized. Men whose judgment we must respect tell us other materials are more durable, and particularly have they commended the effect of amalgam upon the dentine of teeth below medium in quality. Where deviation seems best, I would suggest gutta-percha and tin in positions not exposed to attrition; amalgam usually elsewhere. When the point of recurrence is at the cervix, I think combination fillings of gold and amalgam have been suggested, but for some reason not explainable I have no love for this combination, and only use it to overcome insurmountable or annoying difficulties in obtaining access for the proper condensing and finishing, or where cavities extend far below the gum. When recurrence is always at the cervix, we should examine carefully to see if the fault is not in the operator, due to a lack of care on the part of the patient. In deciding upon deviation, we should be guided largely by the probable period of exemption from recurrence, which knowledge comes from the ability to diagnose, and the personal acquaintance time gives us regarding the probabilities in each patient's mouth; yet the knowledge gained by long acquaintance is often the hardest to acquire in this class of cases, for the very failures which it is impossible to prevent, cause them to seek other counsels in the hope of relief.

Many of you will think me debased in tone for suggesting expense as a factor in the choice of material; but it is really only the few who come to the front rank in our larger towns and cities who can eliminate this consideration. To those of us practicing in smaller places, when a portion of our clientele are in very moderate circumstances, this becomes a very important consideration. Ethical evolution makes rapid progress, and considering the age of our profession, dentistry has held its own in this direction; but the dentist is not so far ahead of his environment as to be running his office as an eleemosynary institution, and even if he were, he would find practical difficulties in his way, so long as he and his family maintained the bad habit of eating. So, I say to you, if your patient can not afford to pay for gold in his back teeth, put, in carefully prepared cavities, carefully inserted and finished amalgam fillings, and thank God you are a good dentist, and a benefactor to suffering humanity, and a greater honor to your profession than he who would have turned him from his door to fall a victim to the hypodermic needle.

Neglect of personal care of the mouth, by the patient, may influence choice of material. Insufficient access suggests cause for deviation. Of course, in most cases this may be overcome, but in many, the mutilation necessary seems to more than offset the advantages to be gained.

Sensitiveness may necessitate temporary work. Oxy-chloride or oxy-phosphate of zinc fillings for a few weeks or months will usually allow the dentine to return to its normal condition. Liability to thermal changes may frequently be overcome by simply lining with a non-conductor; but when the cavities are deep-seated, with a tendency to irritation, I prefer to varnish with a chloroform solution of fir balsam, or an ethereal solution of gum copal, and fill with oxy-phosphate of zinc, and later, remove a portion to veneer with a metallic filling.

The age of the patient seems to me to offer important reasons for deviation. I would say that, as a rule, very little gold should be used before sixteen. Previous to that, there is not enough resistance in the teeth to make it probable that fillings are to be enduring. Gold, requiring more extensive free cutting than other materials, entails larger future sacrifice of the teeth when renewals are necessary. Moreover, in approximal cavities, I believe that gutta-percha often lasts the longest, and requires much less sacrifice of tooth substance. Liability to thermal changes is also thus avoided, with all the misfortunes that it entails.

Children under this age, during the time most likely to require our attention, are frequently passing through the most nervous period of their lives, and long sittings and painful operations are to be avoided, so far as is consistent with the well-being of their teeth. The materials suggested for these cases are, on approximal surfaces, particularly of the incisors, gutta-percha; fissures in molars and bicuspids, tin, or tin and gold, or where the teeth are of very good quality, gold alone. Where these cavities are large, especially in the molars, oxy-phosphate of zinc, and occasionally amalgam.

I could occupy all the time at my disposal upon this branch of my subject, and believe the proper treatment of these cases should be authoritatively settled. Some years ago, I read an article, or some remarks, by Professor Darby, of Philadelphia, on this subject, that influenced my practice, but although I have searched my journals for some years back, I have not been able to find it. Dr. Perry, in an article on the care of the teeth to the fifteenth year, read before the Odontological Society of Pennsylvania, January 13, 1894, advocates the use of but little gold up to that age, although he speaks of some exceptions, one of which is the filling of the mesial face of the first permanent molar, when needed, with gold at the time of loss of second temporary molar, because of accessibility and the opportunity for very thorough work. He also recommends the raising of the gum over partly-erupted molars, and if softened places are found, slightly excavating and filling with oxy-phosphate of zinc, or in soft teeth without these places, simply washing and drying, and placing a pat of oxy-phosphate in the cusps. But the article is too good to be misquoted.

For my own practice, my reading and my personal observation have been sufficient to make me take a firm stand and refuse, even at the expense of loss of patient, to place gold in young teeth, except as indicated, with occasional exceptions that present themselves, and do not seem amenable to ordinary rules.

I had supposed this was accepted dental doctrine and very orthodox, until recently, when some observation and conversations with men of good practice has led to the discovery that it is far from universal; and while I have not gone much into details, because so much has already been written, yet it is my desire to present it in such a manner as to call out the opinions of others, even if it leads to my discomfiture.

If there is any one place in which correct doctrine should be more firmly established than another, it is in our treatment of the little ones; for no greater responsibility ever faces a dentist than when a little child seats itself in his chair. On his treatment, there may rest the future health, appearance and well-being of the man or woman.

Treat the little children as you would have other men treat yours. Give them that care and attention you would have the physician or school-teacher bestow on your children. Consideration of pocket-book and ideas of parents have no place here; you stand responsible for that child, and nothing or no one must be allowed to interfere.

So far, my paper has been on choice of filling materials, which, for convenience, I have chosen to treat as deviations from gold. You will all recognize that I have far from covered the ground, for I have said nothing of pulp exposures, building up with amalgam badly-broken teeth that are even unfit for crowns, and many other things; but my paper is already too long, and I am further asked to suggest the methods of use of the different materials. Elaborate details it is not my purpose to furnish, and it is certainly embarrassing to tell such a body as this how to use materials that they are handling every day; but please remember that in this whole paper there is no pretense of offering you anything new or original.

In my own office, semi-cohesive cylinders receive the preference. In the smaller class of approximal cavities, I usually condense by hand pressure; in all others, I use an electric mallet. This instrument has been condemned by many, but to those who have become familiar with it, it is a great comfort. With an intelligent assistant to anneal the gold and carry it with pliers to the cavity, personal exertion is reduced to the minimum, and I often feel that I am resting when condensing the gold.

The old Bunsen battery was certainly a great care, but speaking within my own experience, the Partz acid gravity battery I find always ready for use, requiring less care than my dental engine. But do not understand me as advocating any particular method of condensing gold. A friend of mine says that the hand of cards that wins is the one that is well played, and I believe just as good results are attained by one method as by another. The rest is a question of personal adaptability and comfort. I usually prefer filling perhaps one-third of the cavity by hand pressure, the exact portion depending upon the character of the work. When the use of the mallet begins, I prefer rather smooth, rounded-edge instruments, beating the gold together and expelling the air with a sweeping movement of the hand, keeping the filling as near level as possible, going over all surfaces occasionally with a hand instrument. Large contour fillings are sometimes finished with number thirty or sixty rolled gold.

It is not my usual custom to drill pits for starting. When the shape of the cavity is such that the first cylinders have a tendency to rock, I place crystal mat gold at the bottom and carefully knead it to place. This form has much less tendency to rock than cylinders, and some as satisfactory fillings as I have ever made have been done entirely with it. When there is so great a tendency to rock that even this form of gold gives trouble, and extreme sensitiveness or any other reason makes me disinclined to cut away to overcome it, a matrix is firmly adjusted with two or three large, loosely-rolled, soft-gold cylinders at the bottom. A large pellet of cotton is then placed over them, and they are forced and condensed to place. The cotton is then removed and the gold examined with a hand instrument to see that all is firmly in position. Other gold is then built upon what will usually be found to be a firm base, although the remainder of the filling should be retained independently of any adhesion to it. The same tendency may be also overcome by placing a little oxy-phosphate or hardened fir balsam dissolved in chloroform at the bottom, and, catching a few pieces of gold in it, it is allowed to set or dry. Then these pieces are condensed and more added, and the filling is continued. But it is to be distinctly understood that in no degree are either the oxy-phosphate or varnish to be depended upon to retain the filling.

Of course, you all recognize these as devices that have been published many times, and they are ingenious methods for overcoming annoying conditions. But they are to be treated as such, and not as resorts for escaping the proper shaping of cavities. Exceptional methods are justified only by exceptional conditions.

Shall I tell you of the use of an ice-water bottle in mixing oxy-phosphate, or of the many other things about it that are spread over the pages of our dental journals? I can only recapitulate things, and sound warnings often given before. It is a treacherous material; on coronal surfaces often doing wonderful service; on approximal surfaces as treacherous as quicksand, and yet possessing features that make it indispensable. It has been recommended to fill at the cervix of approximal cavities with gutta-percha before introducing it. Coating with paraffine is said to add to its durability. I varnish all cavities in which I place it, for fear of injury to the pulp.

Gutta-percha is a filling material that needs careful manipulation, which it does not always get, yet its durability is marvelous. Cut into small pieces; place over a hot-water heater before it is hot, that the pieces may be slowly and evenly heated throughout; varnish the cavity with a chloroform solution of fir balsam, as recommended many years ago by Dr. A. M. Holmes, and pack with the hand instruments used for gold. Avoid surplus.

Tin, once the "stand-by," fallen somewhat into disuse, now again revived, is one of our best materials for children's teeth and teeth of soft structure. So much has been said of it lately that it hardly seems more than necessary to call your attention to it. Professor Darby, of Philadelphia, has demonstrated its cohesive properties in shavings. Excellent foil may now be obtained, and its use should become more general. It is said to preserve tooth structure when packed in wet cavities. Like gutta-percha, it lacks in its resistance to mastication.

Amalgam, which has been "through the war," left apparently bleeding and dying on the field, still bobs up serenely to comfort the poverty-stricken, and be our sheet anchor when everything else fails. It will save old roots hardly worth a crown, and teeth with but outer walls standing may be built up so as to save the necessity of one for years. I prefer to use a fairly dry mixture, but not so dry as advocated by many. In approximal cavities, opening into the coronal surfaces, or where walls are badly broken, I like a matrix. Placing the amalgam pellets in the cavity, condensing with instruments, and frequently throughout the filling with cotton or bibulous paper, occasionally removing a layer of the amalgam before adding other pieces, you will have a filling that will set quickly and, if finished in accordance with this method, will usually have and retain a bright, light, inconspicuous appearance. I sometimes work gold into the final surface, but do not see that I gain much over the use of the cotton or paper. This method of bringing the mercury to the surface, and the removal of the upper portion, gives a hard, quick-setting filling.

It seems unnecessary to mention other materials, but I can not close without one more reference to the matrix. For plastics, it seems to me indispensable, and occasionally in building up badly-broken teeth, I leave a band matrix on over night. I make quite free use of amalgam in building up teeth with but little of their walls remaining; for while I am a friend to the golden crown, I am only so as a last resort. Some years ago, I made considerable use of the matrix in gold work, and get occasional valuable service from it yet. I do not care to discuss its merits in this connection; I only know that in my hands it is not often useful. Friends tell me I miss a great comfort, but I feel I do better work when I have my edges, inside and outside, in full view. If the fault is in me, I am sorry, but I must keep within my own limitations.

I have not recognized the need for taking up in detail the filling of a lot of cavities with different materials, and possibly thereby I have missed the spirit of the task assigned me. When a cavity is properly shaped and the material selected, the rest is comparatively easy. In gold work, particularly, I think most of our failures are the result of improper preparation, or finishing, rather than improper packing of gold. I have tried to indicate some of the principles that guide me in the choice of materials in my daily work. In methods, I have tried to indicate just enough of the general principles by which I am guided to give you an opportunity to discuss modes, if you choose. If I have disappointed you and the Committee, I am sorry. That my paper is too long, I am painfully aware, but unusual circumstances have intervened, and oblige me to say in words of another, "I didn't have time to make it shorter."

FINISHING FILLINGS.

BY FRANK B. DARBY, D. D. S.

Read at the Union Meeting of the Fifth, Sixth, Seventh and Eighth District Dental Societies, held in Buffalo, October 30 and 31, 1894.

Many subjects have before now been assigned me to write upon, and I have generally hit upon something to make them presentable, but it seems to me that the subject of finishing fillings is absolutely barren. The very idea of undertaking to tell a gathering of dentists how to perform this work, when they have been doing it very acceptably to themselves for years, seems almost ridiculous. I have no new or original method to offer, in fact can hardly present an original idea, for the subject was threadbare years ago.

There is no doubt in my mind but that every dentist within my hearing knows how properly to finish all fillings, but the question is, does he do it? The lamentable exhibition of unfinished amalgam fillings which are daily paraded before us, testifies that he does not. A prominent dentist once remarked that the ordinary amalgam filling, put in in the ordinary manner, by the ordinary dentist, at the ordinary price of one dollar, was not worth an ordinary dam. Unfinished work probably had its influence.

Every dentist knows that there has not yet been produced an amalgam which will upon hardening leave a smooth surface. He also knows that the rough surface is detrimental to the stability of his operation, leaving the question of appearance aside. Now it must be granted that the large majority of amalgam fillings are not introduced with the idea that they are to receive a fine finish; consequently when hard they are not susceptible to the refining influence of the engine and polishing materials. But when properly introduced, under cover of the rubber dam, and ordinarily quick setting, they may be finished before its removal, and with the expenditure of but very little time.

First, they should be trimmed into shape with properly formed, sharp instruments, then follow, if proximal, with the finest cuttle-fish strips, and finally polished with flour pumice, using architects' cloth as a vehicle. Fillings that are accessible to the engine should receive the same treatment, substituting the fine leather polishers for the tapes. Fillings that are given time to harden, and require a second sitting, will necessarily demand more time, and the emery tapes and fine corundum will be needed at first.

Tin fillings require a good deal of burnishing throughout the process of finishing; otherwise they require the same treatment. It will be found, however, that sandpaper disks or strips cut better than emery on tin.

It is of course understood that all phosphate and oxy-chloride fillings are hardened under the rubber dam, and finished before its removal. Sharp scrapers, when the filling is accessible, should be used to remove the surplus, these to be followed with the fine cuttle-fish strips, and the final finish given with architects' cloth, without the help of any powder whatever. The coarser tapes or disks may be used for removing surplus, in lieu of scrapers, if preferred, but more time will be required to do the work. Fine corundum stones or scrapers may be used on accessible surfaces. The burnisher, if used at all, should be without force.

A gutta-percha filling without a smooth surface is an abomination. But to produce it is not always an easy task. The friction with chloroform, as advocated by some, has serious objections, for while it leaves an even surface, it does not leave a hard, smooth one. The use of hot instruments for trimming is liable to leave an imperfect filling. Grinding is out of the question, so that nothing remains but the cutting instrument, finely sharpened, to accomplish the work. A little experience will enable the operator to produce almost a perfectly smooth surface, if he keeps his instruments sharp.

The labor of finishing proximal fillings is reduced to a minimum by using a properly adjusted matrix for gutta-percha and phosphates. A mere wiping of oil will prevent the latter from adhering.

Gold fillings seem to be the pets of most operators, and therefore receive the most attention, when really it is no more essential that they should be smooth than any other. They call for the same *modus operandi* that is suggested for hard amalgam, with the addition of burnishing. Sharp trimmers should be employed for proximal fillings, followed with emery strips or disks, and finishing with cuttle-fish, and finally the architects' cloth with flour pumice for the final polish. Between each step the burnisher should be used. The engine is suggested when accessible, with fine corundum, followed with the leather buffs and pumice to a final finish.

I suppose the last touch given a gold filling is simply a question of taste. In front teeth I have seen large gold fillings which were as dazzling as high-finished Bowery jewelry, and quite as suggestive of deficiency in refined taste. The modest, soft, velvet-like finish which flour pumice will impart to metals, has no equal, both for durability and appearance. This should be applied after the filling is finished, when one is satisfied that it is good enough. It requires but a minute more of time, and the result justifies the outlay. Apply it with buff leather polishers, running the engine very, very slow, or if with architects' cloth or linen tapes, work them slowly. This flour pumice is easily obtained by stirring ordinarily fine pumice into water, and allowing the bulk to settle, after which pour off the cloudy water into a shallow dish, and place it in the sun to evaporate, and when dry it will leave the flour pumice ready for use.

Emery strips and disks are much more effective for cutting gold or amalgam if a little olive oil is applied. They also run smoother, with less annoyance to the nervous system, and also prevent to a considerable extent the heat from friction.

You will all join me in the assertion that overlapping edges are the rocks upon which many of our finest efforts are wrecked, so that I need not caution you against them. Perseverance and a good supply of sharp trimmers will enable us to avoid the danger. I have no sympathy for the man who fills proximal cavities in posterior teeth without the matrix, and has a protrusion of filling to cut away at the gingival margin.

Too many fillings are introduced without the final result of finishing in view, consequently much grinding and vexation of spirit is required to remove a surplus which would not have been there if the original shape of the tooth had been given a moment's consideration at the outset.

A few moments' careful study of the articulation will very materially lessen the work of finishing, and relieve the necessity of coarse corundums, which have no place on properly shaped fillings.

TWENTY-SIXTH ANNUAL UNION MEETING
OF THE
FIFTH, SIXTH, SEVENTH AND EIGHTH DISTRICT DENTAL SOCIETIES OF THE STATE OF NEW YORK.

A REPORTORIAL REVIEW.

Ever since the organization of the Dental Society of the State of New York, with its subsidiary district societies, those which lie in the western part of the State have held their semi-annual meetings together, each society alternately officiating as the host for the occasion, thus insuring a large attendance and animated discussions. The twenty-sixth of these was held in Buffalo, October 30th and 31st, and it was one of the largest of the series. The Genesee House was chosen as the headquarters for the dentists, and the sessions were held in the large parlors. There were enough of other rooms on the same floor to accommodate the numerous displays of dental goods, so that all the varied interests of the meeting were in close proximity.

The meeting was entirely devoted to the reading and discussion of papers, and of these there were sufficient entirely to fill the time. In place of the usual banquet there was a kind of "federal" treat, all the members dining together on the last day of the meeting, each paying for himself, after which those who remained attended a neighboring theatre, tickets being provided upon the same plan. This tended to promote the social features, while no one was under any obligation to his entertainer. If this innovation is followed at the subsequent meetings, a great burthen will be lifted from the society which has hitherto acted as host, for they will be required to furnish only the materials for the intellectual part of the meeting, but the virtue of hospitality will remain uncultivated.

The papers generally were of a high order, and the discussions indicated that the various subjects had been studied up for the occasion. This necessary preparation had been secured, at least in part, by naming one or more members to open the discussion of each paper. To this end the person selected had been furnished with a copy of the paper which he was to discuss, in time for careful examination. More than one aspect of the question could thus be presented. This plan presents many advantages, but it has some detrimental features. The one who has been given the privilege of a prior study of the paper is so much better prepared to make a favorable impression and to exhibit his readiness in debate than the others, that they naturally shrink from entering the lists, and, as a consequence, there is less of freedom and spontaneity in the discussion. But it insures the presentation of some ideas, and at times acts as a wholesome check upon the loquacity of those who are inclined to talk too much. It tends to make a meeting more formal and decorous, and it keeps the debate within the proper limits. Hence, the advantages outweigh the disadvantages, when the man who is best qualified to speak upon any definite subject is selected. When the principal speaker is chosen because of any other reason, the result is usually a more complete failure than when the go-as-you-please system prevails.

There were no clinics, and this was a step in advance. These too often degenerate into something discreditable and illegitimate. Either they are given by some one who has a pecuniary interest in the material or implement used, and are thus made a mere medium for advertising, or they are a means for personal display and the gratification of individual vanity. Someone who, perhaps, has no great or unusual skill, fills a crown cavity in a molar, which might as well and readily be filled by almost any of those who are onlookers. If it is criticised, the operator is offended, and if it is not, half the spectators are. But a comparatively small number can witness the operation, while it occupies time that might be used for the benefit of all. The average society clinic contains too many elements of a sordid nature to make it profitable, and except under unusual circumstances it should be stricken from the schedule of such gatherings. In these days of professional education, when every dentist must have a college training before entering upon practice, the kindergarten methods should be eliminated from our meetings. The clinic should belong to the undergraduate, and should be banished from the meetings of experienced practitioners, except when used to illustrate some new and novel method of practice.

There were a number of papers of a general character, which were discussed more or less fully and intelligently. These papers are published in this number, but no full report of the discussions has been attempted. In that read by Dr. Belcher, upon Anæsthesia, the chief discussion was upon the question whether the unconsciousness produced by nitrous oxide was induced by a true anæsthetic action, or whether it was mere asphyxia. The essayist took the latter ground, and he detailed a series of experiments which he had conducted going to establish his theory. But the paper speaks for itself and should be carefully read.

Dr. F. W. Low opened the discussion, and related several incidents which had occurred in his own practice, and drew lessons from what had occurred in the practice of others. If nitrous oxide served only to induce asphyxia, and if the unconsciousness resulting from its exhibition were only the lack of oxygenation of the blood, he argued that artificial respiration should be the first means employed when untoward results supervene. He related his experience with forced or artificial respiration, and introduced Dr. G. E. Fell, who exhibited his apparatus for forced respiration and for the giving of oxygen gas. With this, Dr. Fell claimed that he had kept people alive for days after the taking of lethal doses of opium and other drugs.

It was not admitted by other speakers that all the phenomena of the unconsciousness produced by nitrous oxide were the effects of asphyxia. It was quite true that experiment had proved that animals died in about the same time when confined in a jar filled with nitrous oxide as when immersed in carbonic oxide gas, but the symptoms of death were quite different, and the tissues after death did not present the same appearance. A person might reach the anæsthetic stage under nitrous oxide without any indications of cyanosis. The gas itself is taken up by the blood and causes a change in the appearance of the corpuscles, in some instances not unlike those induced by the presence of chloroform. By the addition of oxygen, persons and animals had been kept in an unconscious state for hours, and even without this, anæsthesia had been prolonged sufficiently for the performance of extended operations painlessly, and that without the usual symptoms of asphyxia.

Of course, nothing was definitely settled, but each was, doubtless, stimulated to closer observation, and this may result in positive information. All who listened to the reading of the paper and the discussion had their ideas of the anæsthetic state broadened, and gained useful knowledge concerning the various functions of life which are involved in that condition.

The paper read by Dr. W. W. Coon, of Alfred, upon "Hypodermic Medication," did not receive the attention that the merits of the subject demand. This method of administration is admirably adapted to many of the exigences of dental practice, and practitioners should become more familiar with it. Remedies injected directly into the circulation act much more promptly and effectively than when taken *per orem*, and a less quantity is demanded. When a drug is administered internally, it must go into the digestive tract, be taken up by the absorbents with nutritive matter, and thus reach the blood, by which it is carried to the tissues which it is desired to affect. A considerable proportion of it becomes non-effective, while more is eliminated by being carried directly to the excretory organs, and thus its efficiency is greatly diminished.

When it is injected directly into the blood current, there is none of this waste, and it reaches the desired tissues much more directly; hence the drug action is more prompt and intense. When dentists desire to administer any drug, it is frequently during some crisis, and time is everything. The few moments saved in the action of the remedy when it is administered hypodermically may mean the salvation of a life.

Not infrequently, too, the patient is in an unconscious condition, and cannot be induced to swallow remedies. In such instances, the hypodermic syringe is almost the only refuge. The principal manufacturers of drugs are now putting up such as the dentist will most frequently be called upon to administer in the form of tablets, each containing the proper subcutaneous dose. All that is necessary is for the practitioner to dissolve the tablet in a small amount of water, draw it into the syringe and inject it properly. Some of the remedies are combined; as, for instance, sulphate of morphia and of atropia are compressed into one tablet, containing one-fourth of a grain of the former to one one-hundred-and-fiftieth grain of the latter, and thus the narcotic and anti-spasmodic virtues of the two are combined. The tablets are very small, and require but a little water to dissolve them. The best method for use is first to charge the syringe with about twenty minims of water, and this is injected into a teaspoon. One of the pellets is dropped into this and crushed with the end of the syringe. The whole is then drawn up and forced out of the syringe three or four times, when it will be fully dissolved, and it is finally drawn into the barrel and the needle is attached. The syringe is held with the point up, and the piston forced in until all the air is expelled, and a single drop of the solution is seen at the point of the needle. It is then ready for insertion. The point of the needle is gently inserted through the epidermis and into the sub-cutaneous tissue beneath, and the solution slowly forced out. Care should be used to prevent the penetrating of any of the larger blood vessels, though there is really little danger if ordinary heedfulness be exercised.

The principal precautions that are essential are as to the cleanliness and sterilization of the syringe point. This should be secured either by passing the point through the flame, which is the most effectual means, or by immersing it into, and even drawing up into the barrel, some antiseptic remedy. The danger in the last precaution is that you may inject some undesirable antiseptic into the system. But great care must be used to make the points innocuous.

Of course, if air were driven into the veins by means of the hypodermic needle, the consequences may be fatal, for an embolus might ensue, and when the air reached the heart it would be almost certain to cause death, if it existed in any quantity. But any one with a moderate amount of medical knowledge should be competent to administer remedies subcutaneously. He should have two or three hypodermic syringes, that one may always be found in good condition. The principal remedies should always be at hand in the dentist's medicine case.

The paper by Dr. M. H. Fish, entitled "Why not have County Dental Societies," was upon a subject that has become somewhat trite. The essayist cited the facts which show that but a small, almost infinitessimal proportion of dentists in the country are members of societies. This he thought might be remedied by carrying societies to their very doors. They do not attend the State or district meetings because the members are strangers to them, and because the distance precludes. If societies were established in all the counties, as in Medicine, he thought the most of them might be induced to join, and thus receive inestimable good.

The discussion was free, and the arguments of the essayist were met by the assertion that the local jealousies would be more brought to the surface, and become greater factors in disorganization in small bodies, the members of which were in close contact, than where the representatives were more widely distributed. The great enemy to society organizations is local differences and jealousies. To these, local societies would be more subjected. All kinds of devices have been resorted to, that a greater proportion of the dentists of the State might be brought into association. The advantages are obvious to anyone, and the benefits are greatest in the case of the dentist who lives in the smaller towns. But everything seems to be in vain. The average practitioner is a jealous and a truculent kind of a fellow, and the greater his need for the ameliorating influence of dental societies, the more is he disinclined to avail himself of them. He fears that his competitor will be elected to an office which he cannot compass, or that he will by some means obtain a greater notoriety, and his miserable, suspicious temperament, which cannot brook the advance of another, prevents his taking advantage of the means offered by which he might raise himself to the level of a superior rival. The general opinion seemed to be that the leopard would not change his spots nor the Ethiopian his skin, and that the institution of county societies would be too hazardous an experiment to try.

A paper by Dr. A. W. Harlan, of Chicago, was upon the programme, but it did not arrive in time for proper presentation, and of course was not discussed. It is, however, included in the published proceedings, and it certainly contains much that is instructive.

There were two so-called "symposiums," by which is meant that there were papers read *en suite* upon definite and cognate subjects. One of these was in the field of Operative Dentistry, and the papers read in this connection are published in this number. Each is the sequel and the corollary of the other. The first was presented by Dr. F. E. Howard, upon "The Preparation of Cavities;" the second by Dr. E. D. Downs, upon "The Choice of Filling Materials," while the third was by Dr. F. B. Darby, upon the "Finishing of Fillings."

Dr. Howard's paper was illustrated by well-executed drawings, which it has been impossible to reproduce in this publication. The system of nomenclature that he has adopted may be found fully developed and explained on pages 138 and 139 of the July number of this journal. By referring to that number and the illustrations which it contains, his method of preparing cavities for filling may be more fully comprehended. In describing surfaces, he uses terms with which the average dentist is already familiar, such as mesial, distal, coronal, buccal, lingual, labial, palatal, etc. By combining these, he is enabled to designate any surface or angle of any tooth. To distinguish the inner surfaces of the lower from those of the upper teeth, he calls the one lingual and the other palatal, and then, a very few other arbitrary distinctions being comprehended, there is no difficulty in understanding the way in which he prepares the different kinds of cavities. Of course he claims nothing specially original or novel for his method.

Dr. Downs entered more deeply into the philosphy of his subject, but he was very liberal in his treatment of it. There is such an opportunity for a wide divergence of opinion in selecting the material with which any special cavity shall be filled, so many different factors must enter into the sum of the whole, that there is little wonder that scarce any two will in all cases agree as to that which shall be chosen in special cases. The element of personal equation is largely concerned, and the development of individual skill must settle the question for many. One, by long practice, has attained to a proficiency in the use of tin, that enables him successfully to use it in a class of cavities that another finds quite impossible to fill with it. Naturally, his choice is tin foil in a certain structure of tooth.

Another has learned to manipulate gutta-percha in such a manner as to make of it a lasting filling, and he prefers that, while the successful worker of tin complains that it is a poor material, because he cannot make a tight filling with it. It invariably "drags" when he tries to adapt it to the walls of the cavity.

Yet another has no faith in anything but gold, when he wishes to make a really serviceable filling. If he uses amalgam, it invariably shrinks and "balls" up and draws away from the walls, and fails to give any adequate protection, while his neighbor has no difficulty in getting good and permanent adaptation with amalgam, his gold fillings almost invariably leaking and discoloring at their margins, and finally being lost by recurrent decay.

All of these deficiencies are not due to the faults or virtues of the different filling materials. Very much of the failure or of the success may be attributable to skill, or to lack of adroitness in the use of the various materials. Dr. A uses the same scrupulous care in the preparation of a cavity for amalgam, in the keeping of it dry during the process of filling, in obtaining exactly the proper relative proportions of the filings and the mercury, in the nice working of the mass, and in its introduction and consolidation, and finally in the finishing up of the completed and fully crystallized filling, that another would with gold. As a consequence his amalgam fillings are things of beauty and utility. In inserting a gold filling he may exercise the same nicety and precision, taking great pains, but not employing the proper methods in the consolidation and adaptation of the material. He puts in a gold filling in about the same manner that he would one of amalgam. Is it any wonder that he is a firm disciple of the quondam "New Departure?"

Dr. B is the direct antithesis of Dr. A. He is fastidious in the use of gold, and with it inserts beautiful fillings. He employs exactly the proper manipulation, knows when he can get the best effects from soft and when from cohesive gold, is an expert in its use, and his gold fillings are almost indestructible. But when he comes to the employment of amalgam, which he considers an inferior material, he thinks it scarce worthy much attention. He prepares his cavity carelessly, inserts the filling clumsily, and without securing the perfect dryness which he knows is essential for gold, and the results of his work but serve to confirm him in the opinion that amalgam is an unfit material with which to fill teeth.

Yet the results attained in neither of these cases were wholly due to the merits of the material employed. Drs. A and B each failed with that which the other used with the greatest success. The varying results were due to the difference in skill, and the care, or lack of care, shown in the different stages of the work.

> "The fault, dear Brutus, is not in our stars,
> But in ourselves, that we are underlings."

In either case, perhaps the material was all right, and properly used might have enabled Drs. A and B to attain success in the instances which proved miserable failures.

These were some of the thoughts which the reading of the excellent paper of Dr. Downs excited in the mind of at least one of his auditors. This was the general tone of his philosophy, although he laid down certain definite principles as axiomatic, and among them was the impropriety of placing gold in the teeth of children, although even in these instances he admitted that there were exceptions. The paper was not discussed as thoroughly as its merits warranted, perhaps because being read in connection with others its good points were blended with theirs into what proved to be a harmonious whole.

Dr. Darby set out by saying that it was impossible to present anything of interest upon so hackneyed and barren a subject as that of finishing fillings, and then proceeded to prove the very contrary by presenting an essay to which all present listened with the closest attention, and which proved to be exceedingly practical. If he had as completely overturned all his assertions and enunciations as he did his first one, the historic bull in the china shop would have been as a fly in a tumbler to him. In nothing was he more instructive than when he spoke of finishing gutta-percha fillings. He declared that one of them without a smooth finish was a thing to be despised. Yet that surface is difficult to attain. If a heated instrument be used the filling is dragged away from the opposite wall. If chloroform is employed it softens the margin, and the surface left is far from smooth. A gutta-percha filling cannot be ground down, and there is left only the sharp cutting instrument with which to trim it into shape. Thus, in a very few words, he placed before his hearers the whole philosophy of the finishing of gutta-percha.

There was very much that was instructive in Dr. Darby's remarks upon finishing gold fillings. He recommended architects' cloth to carry the polishing powders. But the whole paper is published for the perusal of the reader, and he will do well to turn to it and read it over again.

When a series of papers is presented, and all are read before discussion is permitted to any considerable extent, the latter is apt to be desultory. There is so much of territory covered that the listeners get lost in it, and the debate flounders. This was the case with the papers of the first "symposium." The remainder of those read will be presented in the next number of this journal.

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THE ANNIVERSARY EXERCISES OF THE SEMI-CENTENNIAL OF THE DISCOVERY OF ANÆSTHESIA, AT HARTFORD, CONN.

A part of the ceremonies of the occasion was the unveiling of the beautiful and artistic memorial tablet placed in the walls of the Robinson building, corner of Main and Asylum streets, on the spot where the first administration of an anæsthetic for obtunding purposes was made. This tablet, a cut of which will be found in this number, was paid for by contributions made by dentists, the whole matter being under the charge of a committee consisting of Drs. G. L. Parmele, James McManus, and Civilion Fones.

A banquet was held on the evening of the 10th, and was notable for the number of distinguished guests who were present, and especially for the attendance of a number who were concerned in the discovery. In the first place Dr. G. Q. Colton, who administered nitrous oxide gas to Wells himself for the experiment which demonstrated the possibility of painless surgical operations, was there. Dr. Pinckney W. Ellsworth lived in the same house with Dr. Wells when he was making his experiments. Henry Barnard, LL. D., and G. W. Russell were also present. These men are all over eighty years of age, and knew Dr. Wells personally and intimately. The Mayor of the City, and many other men of distinction were present. Charles Dudley Warner, General J. R. Hawley, and Hon. A. E. Burr sent letters of sympathy and cheer, while many other distinguished men sent regrets at their inability to be present. The speeches were all of a high order, and all the exercises were worthy the day and the occasion. Not the least pleasant treat was the presence of Charles T. Wells, the son of the man whose memory that meeting was called to honor.

The banquet was directly under the supervision of Dr. Charles McManus, chairman of the Executive Committee of the Connecticut State Dental Association. The president of that society, Dr. Charles P. Graham, presided and acted as toastmaster. After the enjoyment of the generous feast provided, Dr. Graham called upon Hon. O. Vincent Coffin, governor-elect, who said that when he reflected in whose presence he was, and of what were their achievements, and how many there were of those to whom the world was a debtor, he felt like closing his mouth and keeping it resolutely shut. But when he reflected upon their generous hospitality, and their high standing in the community, he could do no less than convey to them his earnest greetings. Unfortunately, other imperative duties called him elsewhere, and he regretted that he could not spend the whole evening in such congenial company. He could only leave with them his best wishes and congratulations upon the good work which they had accomplished.

The toastmaster said the present meeting was held to commemorate the fiftieth anniversary of a great discovery. Thousands of human lives have been saved through the agency of anæsthesia. To Dr. Horace Wells, a practicing dentist of Hartford, was the world indebted for this great boon. There has been a long and bitter controversy over the question to whom the credit should be given, but the world has finally agreed that it belongs to Wells.

During the early part of December, 1844, Dr. G. Q. Colton, who is present to-night, visited Hartford and gave an exhibition of the exhilarating effects of nitrous oxide gas. Samuel Cooley tried the effects of the gas, but before taking it thought that he would endeavor to frighten those present. He became excited and violent, and this resulted in some injury to one of his legs. Dr. Wells noticed this, and asked him if he felt any pain. Mr. Cooley said that he did not until after the effects of the gas had passed away.

Dr. Wells suggested to Mr. Colton that he bring a bag of gas to his office, as he desired to try it in the extraction of teeth. Mr. Cooley was also to be present. The gas was administered. Dr. Wells himself had a tooth extracted by the late Dr. Riggs, and after his recovery declared with enthusiasm that it was a success, and that it did not hurt so much as the prick of a pin. This was December 11, 1844, and the first operation under an anæsthetic. The City of Hartford has since honored this man, both in her legislative and executive departments. Other countries have done the same, and now the fame of Dr. Wells is firmly established.

I desire to say here a word to the credit of Dr. James McManus, and the committee having this matter in charge. Dr. McManus especially deserves the highest praise for his long continued efforts to establish the fame of Dr. Wells upon a sure foundation, and to make of this affair the great success that it is.

We have with us to-night a son of Dr. Horace Wells, and I take great pleasure in now introducing to you Mr. Charles T. Wells.

Mr. Wells said that he had a feeling of kinship with the members of the dental profession, and he took pride in the fact that his father was a dentist. The members of that profession had a right to celebrate this occasion, for it belonged to dentistry and to the City of Hartford, where Dr. Wells lived. After the lapse of fifty years it was a great pleasure to him to meet those who knew his father intimately, and who were familiar with the facts. He remembered his father well, although he was quite young at the time of his death. He remembered the old office, and he spent much of his time there. His father was a man beloved by all, and it meant much to him that he was indeed his only descendant.

Mayor Brainard, of Hartford, was then introduced, and said that it seemed proper that he should address them as brothers, and he was glad to be able to assist in doing honor to the memory of a man who did so much for others. Like Morse with the telegraph, like Stevenson with the railroad, and like Edison with the electric light, he had used something that existed before, but whose most useful properties were previously undiscovered. He had read descriptions of the visit of Dr. Wells to Boston, to exhibit his anæsthesia in surgery. By an accident the man who was making the gas made a blunder, and subjected the doctor to ridicule, and he returned heart-broken to his home. But the discovery was deathless. We all ought to honor his memory as being the one man who had done something for the patient. Others had worked for the dentist.

Dr. G. Q. Colton was then introduced, and said that with Antony he could aver that he was no orator. He was a plain, blunt man, without wit or words. The story of the discovery of anæsthesia was very simple. Just fifty years ago he gave an exhibition of the amusing effects of laughing gas at Union Hall. He had that day visited the office of the *Hart-*

ford Courant, and read his old advertisement, occupying half a column of that paper. After a brief lecture on the properties of the gas he invited twelve or fifteen men upon the platform, and a number inhaled the gas, among whom were Mr.—afterwards Colonel—Cooley, and Dr. Wells. Mr. Cooley ran against a bench and injured one of his legs. On his attention being called to it by Dr. Wells, he declared that until after the effects of the gas passed away he had felt no pain. When the audience was passing out, Dr. Wells came to him and said that he believed a man might have a tooth extracted without feeling it, and invited him to attend the next day at his office and administer the gas to him. At the proper time Dr. Riggs was sent for to do the extracting, and the gas was administered. The word anæsthesia had never then been heard by any of them. Dr. Wells was put to sleep and the tooth was extracted. After his recovery he declared it the greatest discovery ever made, and said that it did not hurt him so much as the prick of a pin. That was the first tooth ever extracted painlessly.

Dr. Wells induced him to give instructions in the art of making the gas, after which he went away on his exhibition business. Dr. Wells tried it and found it successful, and then went to Boston to make the discovery known. He called upon physicians and dentists, and was laughed at for his pains. Among others to whom he exhibited the anæsthetic effects was his pupil, Dr. Morton. He got permisssion to address a class at the medical college.

Prof. Warren said to the class: "Here is a gentleman by the name of Wells, who pretends that he has found something to destroy the pain of surgical operations. If any of you wish to remain and hear him you can do so." About half the class did remain, and Dr. Wells administered it to one of the boys for the extraction of a tooth. The boy cried out (a phenomenon now known to be very common in nitrous oxide anæsthesia), although he afterwards said that he felt no pain, and the class hissed Dr. Wells. Considering the exhibition a failure, he returned to Hartford and continued the use of the gas through the year 1845.

Bishop Brownell, his two daughters, and about thirty or forty respectable and representative citizens of Hartford, afterwards gave their deposition that during 1845 Dr. Wells administered gas to them without unpleasant effects. At the beginning of 1846, the health of Dr. Wells failed and he went to Europe, and in Paris he presented the claims of the gas to the Academy of Sciences, which in recognition honored him with the degree of Doctor of Medicine. During his absence his pupil, Dr. Morton, in conjunction with Dr. Jackson, patented the process, which he had learned from Dr. Wells. They abandoned gas for sulphuric ether, and it was this material which they used. But even in the employment of this, Dr. Wells antedated Dr. Morton by about two years. But Morton engaged the attention of the world, because Wells was an honorable and professional man, who would employ no illegitimate means. Wells saw the credit for his great discovery being given to Morton, and in his state of health it upset his reason. He became deranged and committed suicide. Everyone knew him as an honorable, Christian gentleman, who would never have committed that rash act when in his right mind.

Ether and chloroform supplanted nitrous oxide for a long while, Morton claiming that the latter was not an anæsthetic at all, and that it would not produce insensibility. Dentists would not try it. Finally Dr. J. H. Smith, of New Haven, was induced to take it up, and met with the greatest success. I made an arrangement with Dr. Smith, by which I was to give the gas and he was to extract the teeth, we to divide the proceeds. This agreement was for one week, but it was continued three weeks and two days, and in that time we extracted over three thousand teeth. I thought this a better business than lecturing, and at the suggestion of P. T. Barnum I went to New York, and organized the Colton Dental Association. I carried this on for a time in connection with Dr. John Allen. After a time he left me, and I continued the business alone. After nine months I began to keep a record of extractions, and before I left New York we had reached the total of 186,500 without, so far as I know, a single fatality. I suppose that I take twenty gallons every day myself, to show others how to inhale it. I think that I have added ten years to my life by inhaling the gas every day for the past thirty-one years.

Dr. G. W. Russell said: "I knew Dr. Wells when he was practicing here in Hartford. I was then a young member of the medical profession, and felt an interest in the things that came up as novelties. Dr. Wells was a quiet, unobtrusive gentleman, but a man of genius, who conceived things too deep for the rest of us. He was a man who had an element of courage that enables people to accomplish great results. He made the discovery just as Dr. Colton has described, and I wish to add my testimony as to the originality of his discovery."

Dr. P. W. Ellsworth said that the pressure of his more than eighty years admonished him that he ought not to be out at this hour, but his interest in this cause was so great that he was glad to be present. Dr. Wells was his personal friend, and lived in the same house with him. Within thirty or forty yards of that house the charter of Connecticut lay hidden for many years. On that spot the message of the king of England, taking away certain privileges of the colonists, was read.

I can testify that in my mind there is not the slightest doubt that the honor of the discovery of anæsthesia belongs to Horace Wells. I advised him to go to Boston and get his old student, Morton, to introduce him to some of the medical men there. This he did, but the visit proved unfortunate.

Dr. Stearns said: Nearly every great discovery has been as a prophet crying in the wilderness. Copernicus, while observing the movements of the planets through a hole in the roof of his house, conceived the idea that the sun and not the earth was the center of the solar system. But he did not dare to make known his discovery until after the lapse of twenty years. Even then his mind gave way with the strain. All are familiar with the sad ending of the life of Columbus, who gave another continent to the world, but died in ignorance of the magnitude of his discovery. There are many other like instances, so that our Wells, in the circumstances of his death, in his failure to secure public recognition as a discoverer, and in the fact that he never himself fully realized its full significance, was but keeping company with his own kin.

Some have said that Wells' discovery was but a secondary affair, because Sir Humphry Davy had, fifty years before, offered the suggestion that the pain attending surgical operations might be relieved by nitrous oxide gas. But if this is true, then the discovery of the law of gravity by Sir Isaac Newton was secondary, because Copernicus had suggested the existence of such a law years before Newton discovered it. Columbus, if this be true, was not a discoverer at all.

President Smith, of Trinity College, said: In Trinity they go over the records of those who have done great things in the world of science and politics, and they try to give man a knowledge of those who have contributed largely to human welfare, and among the names of those who have done much for us and for all generations, there is one that is dear to the people of Hartford, and dear to all those who value the blessings conferred by anæsthesia, and that name is Horace Wells. I have the honor of sitting beside a *hidalgo*, whom the Spanish call "the son of something." This son is Charles T. Wells, whose father did something for which the whole world offers thanks; something that will last; something that has been a benefit to suffering humanity; something that is not going to pass away and fade, as do the records of most men who have achieved great things on the battle field, but something which interests every son of man, for there is not one so high as not to feel the need of ministration, no man so low as not to appreciate what has been done for him by anæsthesia.

Henry Barnard, LL. D., said that it was his pleasure to know Dr. Horace Wells, and he had a profound interest in his just fame. Seventy years ago he first took nitrous oxide gas at the hands of Prof. Benjamin Silliman, who, in his course at Yale, always gave one lecture to that gas. Its effects are not pleasant upon him, and he had never, until to-night, imagined that his long extended life was due to its virtues. Dentistry is an honorable profession, but when we look at the benefits which one of its practitioners gave to the world, it takes on a new light. After all that is said and done, we do not grasp the full significance of all that Wells did. No matter what the agent that may be used to produce anæsthesia, it was the application of the great principles by Wells that constitutes the glory.

Dr. Colton has told us of the hundreds of thousands of cases in which he has relieved the pain of tooth extraction. We have read of other hundreds of thousands, but after all, that does not tell the hundredth part of the story of the amount of suffering that has been relieved by the discovery of this man, in whose honor we are assembled to-night. I suppose there is no name to-day that ought to stand higher, or to receive more blessings from men, than that of Wells, who conferred so great a benefit upon mankind.

Judge McManus said that it was his duty in 1891 to draw up a law for the purpose of better organizing the dental profession of the state. In 1893 this law was finally passed, and the dental profession can now be kept clear of men who ought not to be admitted within its ranks. It is very fitting that you join here in honoring one of your own body who has done so much, not only for you, but for the whole human race. He has enabled you, and all the other members of the various branches of the medical profession, to guard your patients against the terrors that may befall those who are so unfortunate as to require their assistance.

Dr. James McManus, upon being called upon by the toastmaster, said that he fully appreciated the kind remarks that had been made about him by the president. It was a matter of great regret that the chairman of the committee, Dr. Parmele, was, through illness, unable to be present. This part of the exercises had been under his special charge, and any delay that might have been observed was because the head of the affair could not be present. He asked that at the close of the speeches those present go with him to the Robinson building, and assist in unveiling the tablet erected to the memory of Dr. Wells.

When they commenced the movement which had its culmination at this time, they found that the Dental Society of the State of New York, and the Odontological Society of Philadelphia, had also commenced the agitation by the appointment of proper committees. The three movements were started about the same time, and had resulted in two meetings; one to be in Hartford, and the other in Philadelphia. The Connecticut movement had resulted in the placing of the tablet on the spot where the first administration of an anæsthetic was conducted. This was through the contributions of over two hundred and ninety American dentists, nearly two-thirds of whom lived outside Connecticut, so that no one can say that it is a local affair.

I now desire to offer two motions, the first of which is that the thanks of all concerned be given to Mr. Woods, the sculptor of the tablet, for the personal interest he has taken in the work, and for which he has been insufficiently rewarded. The second is that we present this tablet to the City of Hartford.

Both of the motions were carried, and the meeting adjourned, to convene again before the tablet, when the ceremonies of its unveiling and formal presentation to the City of Hartford were duly conducted.

THE ANNIVERSARY EXERCISES OF THE SEMI-CENTENNIAL OF THE DISCOVERY OF ANÆSTHESIA, AT PHILADELPHIA, PA.

The celebration of the fiftieth anniversary of the greatest event in the history of surgery, at Philadelphia, was intended to be, and was, national in its character. At the last meeting of the American Dental Association, held at Old Point Comfort in Virginia, in August last, the movement was launched by the appointment of a Committee on Organization, an Executive Committee, and a General Committee consisting of representative dentists from all sections of the country. It was determined that there should be a meeting upon the 11th of December, the date of the original discovery, at which two addresses should be made, and that a banquet should be given in the evening. Prof. James E. Garretson, of Philadelphia, was selected to present an address upon the benefits of anæsthesia from the standpoint of the surgeon, and Dr. Thos. Fillebrown, of Boston, was selected to present its history, as properly representing the section in which the discovery originated.

The anniversary meeting convened at 2 o'clock in Association Hall, and was attended by a large number of visiting dentists, a full representation of the local profession, and the students from the dental colleges of the city. It was called to order by Dr. J. D. Thomas, chairman of the Executive Committee, who introduced Dr. J. Y. Crawford, of Nashville, Tenn., president of the American Dental Association, who said:

Mr. Chairman, fellows of the dental profession, ladies and gentlemen: At the meeting of the American Dental Association at Old Point Comfort, Virginia, on the second Tuesday of August last, a resolution to organize this memorial occasion was introduced by Dr. J. D. Thomas. This magnificent assemblage is the culmination of that resolution, and this is the gathering to celebrate the emancipation of the human family from pain by the discovery of anæsthesia. Fifty years ago to-day Horace Wells made the first legitimate exhibition of anæsthesia, in a surgical way, which will entitle him to as much recognition at the hands of a just and liberal profession as was accorded to Jenner, Harvey, and

Pasteur. The incident of the bruised knee was to Wells what the inadvertant remark of the milkmaid was to Jenner. They were both pivotal contributions to the healing art.

Dr. Thos. Fillebrown, of Boston, was introduced, and read an exhaustive paper on "The History of Anæsthesia." He said: Great discoveries and events do not burst forth with Promethean suddenness, but wait long periods of hope, and maybe despair. So it was with the discovery by Horace Wells, which robbed pain of its victory and the knife of its horrors. The ancient nations hunted for anæsthesia. Homer mentions the inhalation of hemp for that purpose. Pliny and Apulius refer to the mandragora wine; the Chinese used hemp in the third century; Theodoric described the *spongia sonniferum* in the thirteenth century. Ether was also known at that time. In 1800, Sir Humphrey Davy said nitrous oxide might probably be used to advantage in surgical operations, where there was no great effusion of blood. But the suggestion bore no fruit for nearly half a century. Of the two anæsthetic agents, protoxide or nitrogen and sulphuric ether, the former was discovered by Priestly, described by Davy, and applied by Wells; the latter was discovered in the thirteenth century, named in the eighteenth, and applied in the nineteenth. In 1846, its use was made known by Dr. Wm. T. G. Morton, at the Massachusetts General Hospital. The anæsthetic properties of nitrous oxide were long known and applied for the entertainment it afforded, but the chasm separating that from its true utility was unbridged until fifty years ago to-day, when the man whose honor we celebrate, by inhaling the gas and having a tooth extracted without pain, fulfilled Davy's prophecy, and made practical anæsthesia a discovered and demonstrated reality. That event was the origin and source of our knowledge of anæsthesia, and made the name of Wells to echo around the world.

Fired with the grandeur of his discovery, Dr. Wells made a visit to Boston, and through the assistance of his former pupil and partner, Dr. Morton, who was subsequently the first to introduce ether, and was a claimant to the discovery of anæsthesia, made an exhibition to the Harvard medical class, by permission of Dr. J. C. Warren. The attempt was an apparent failure. The patient was incompletely anæsthetized and cried out, as they frequently do, and Wells was greeted with hisses of derision. The patient afterwards said he experienced no pain. This failure so disheartened Wells that he shortly abandoned the practice of dentistry, and committed suicide by severing a jugular vein. With the unparalleled honor of the discovery by Horace Wells, the names of G. Q. Colton, Col. Samuel Cooley, Dr. J. M. Riggs, E. E. Marcy, W. T. G. Morton, Oliver Wendell Holmes, Jackson and Bigelow, are indissolubly connected. Marcy suggested to Wells ether, instead of nitrous oxide; Morton made the first public application of ether for surgical anæsthesia; Jackson claims to have suggested ether to Morton, and Oliver Wendell Holmes suggested the name anæsthesia, which is "repeated by the tongues of every civilized nation."

Dr. Crawford W. Long, of Athens, Ga., claimed to have given ether three times in 1842–3. It was not printed until 1849. How could he resist flying with joyous wings to proclaim to a waiting world the great boon to humanity? The honor of the discovery is not accorded to Long, on account of its inauthenticity and its tardy publication. If he used it, nobody knew it, and nobody used it because Long did. Then came the long list of pretenders, denominated generically "jump-up-behinders." In 1846, September 30, Dr. Wm. T. G. Morton administered sulphuric ether for the first time. He made a public demonstration at the clinic of Dr. John C. Warren, at the Massachusetts General Hospital, on Oct. 16, 1846. Morton and Jackson made a joint oath to the discovery of ether as an anæsthetic, and applied for a patent. The next year each claimed to be the individual discoverer. The application was discarded and declared not patentable. In 1847, the Paris Academy proclaimed Morton and Jackson the joint discoverers, but, after a full hearing, they decided that the honor belonged to Horace Wells, as the first to use gases and vapors to perform surgical operations without pain. In 1847, Sir James Y. Simpson, of Edinburgh, made experiments which gave chloroform as an anæsthetic to the world.

Who, then, shall the honor of anæsthesia's discovery make immortal? To each and all of the glorious names who made their individual contributions. But the noble, generous mind that conceived the grand idea, and conferred science's greatest boon on humanity, belonged to the immortal spirit of Horace Wells. The facts maintain the truth of his priority; disputation but weakens the evident conclusion. In honoring his memory, we should regret his sad and tragic end. It is a peculiar fact that his rival claimants both met violent deaths. Morton died suddenly of apoplexy, while Jackson was insane the last seven years of his life. Thus did the shears of fate cut the tent-ropes of their lives. Let us lay the chaplet of honor on his memory. Would we might with it crown his head. The everlasting epitaph of this martyr and hero will be,

THE DISCOVER OF ANÆSTHESIA—HORACE WELLS.

Prof. James E. Garretson, of Philadelphia, was introduced. After thanking the audience for their ovation, he said there was among them one whose shoe-latchets, as to this matter of anæsthesia, he was unworthy to tie—Dr. G. Q. Colton. We are here to honor Wells. Without a Colton there would have been no Wells. We are going to erect a statue to Wells. Let us begin by erecting a human monument—Dr. G. Q. Colton.

Dr. Colton was then presented and seated upon the stage. Prof. Garretson then proceeded to the delivery of the following:

PROF. GARRETSON'S ADDRESS.

I am to assure this great audience that I stand in its presence overwhelmed by the contrast that separates subject and speaker, and that I find words in defference only to the circumstances of the occasion which brings us together.

It is no profane comparison to suggest that naught but a sense of profanation could associate with a priest who should add words to the lifting of the Host. Does not a priest, in performance of this act, set a seal upon his lips? Does he not wrap in vestment that has been blessed the hands which are to touch the sacred symbol?

The profundity of the meaning, not to say the holiness, of what seems to me among the greatest of God's gifts to men, anæsthesia, affects me in its comtemplation as I assume the priest to be affected when he approaches the Host. The full feeling is "Be still."

Silence! and its golden meaning!

Surely,— forcing ourselves to talk and listen,— the gold of anæsthesia is Silence! Silence in place of agonizing, heart-rending screams. Silence in place of cries from the pitying but helpless bystanders. Silence in presence of torture shorn of its terror.

On an occasion, now many years back, I was wandering through the lanes and alleys of Sleepy Hollow Cemetery, in the town of Concord, Massachusetts, when, being led up a hill, I stepped over a low, much-abused hedge of arbor vitæ, discovering a plain, low-set stone, having upon its face a single word. When at the foot of the hill, I had found myself surrounded by what would not inaptly bear description as splendid marbles. Upon these marbles were deeply cut many names and the records of many virtues. Neither names nor virtues had, however, significance to me. No chord was struck, no response elicited.

The word upon the low-set stone of the hilltop was—Hawthorne.

The ring of a bell is its metal. The name of a man is his work. Men who have done something, either as cause or instrument. What reverberations ring out as such names are encountered. Somewhere, everywhere, is a sound. The lives of great men, the memories of the lives of great men, —left to remind us.

Horace Wells. The name does not nor will not still. It rings, and rings, and rings in distinctness, albeit accordant and discordant sounds are everywhere about it.

The task of reviewing the history of anæsthesia was given to the worthy colleague who has preceded me. I am glad of it. Standing, as I feel myself to-day, overshadowed by names and memories, memories of blighted lives, of mental wreckage, of discouragements ending in suicides, what but admiration of the sacrifices made, what but desire to do homage, what else than these should or could fill a human heart on such an occasion. Here Cæsar can be praised, and Rome too.

A new good is an old gift. Not new in ages past, only because channel was lacking. Electricity before chaos. An Edison the production of a Nineteenth Century. Euphrates, Tigris! Both water Mesopotamia, both alike are the Persian Gulf. Not Armenia is the source. A common under-spring is the well constituting the divine afflatus.

My perceptions view Horace Wells as Euphrates and Tigris are viewed; he, and these, and all phenomena, not as things in themselves, but as things in other things.

Whether or not this man was a meditative philosopher, to be found oftenest in haunts apart from men, or whether or not he was simply a vessel capable of holding, but never trying to fill itself, I am alike without knowledge, as without desire to know. He was filled, however. The river of Lethe found in him a channel. Everywhere over the land flows the stream Nepenthe. He was and is Nepenthe.

To change a metaphor: Is invention aught but filling a form? Is this not a matter made plain by Plato, two thousand years back? Are not forms eternal? Forms of things seen yesterday, to-day, and to be seen forever? Forms not yet seen? Is invention else than seeing a form and bringing it down from the sky to the uses of men? Materializing it, properly speaking? How, as I grow old, do I grow impressed with this. The maker of forms the all, the filler of forms, simple instrument.

It is not even slight departure from the immediate subject of the occasion to make further reference to this matter of forms, for it is not otherwise, according to my conception, that Horace Wells is to be either understood, appreciated, or called the discoverer of anæsthesia.

Was it in truth Priestley to whom nitrous oxide owes its discovery? It assuredly was not to Horace Wells. Was or was not anything known of this gas before the day of our own Declaration of Independence? Or is it rather to be put thus? Nitrous oxide is a phenomenon, deductively exposing itself to the chemist out of the droppings of camels upon desert sands. Ammon and ammonia go back to Libya.

No one has been, or is, greater than Plato. What the dung-burners did, or what Priestly has done, is not credited by him as science, but simply as dealings had with phenomena. Science, he says, fritters itself, where its aim is otherwise than knowledge of Noumenom. Things unlike are not necessarily dissimilar. The things that lie within things are multitudinous. Who knows, even yet, what nitrous oxide is? Who knows even what water is? In a word, who knows what, or how much, anything is? Nobody.

But the scientist is the evolutionist. Possessing himself of means he analyzes. Analysis is one, or closely one, with deduction. Science has no thought, or word, or action, outside of matter.

But forms, the true objects of science, as affirmed by Plato, constitute the invisible. The music of a musician is not his notes, the poet's inspirations are not grammar. Reality, or at least nearer approach to reality, is back of these. Notes are to be seen by anybody having eyes, and words are to be heard by anybody having ears. But what as to forms, or ghosts, as these are back of notes and words? What as to the seers of these? No forms being back of notes and words, there are no notes and words in front of forms.

Was not the ghost of anæsthesia with the camel droppings? Was it not with the dudaim, the devil's apple of the Arab? Has it not been with alcohol since men distilled and knew this agent? Is it not with the poppy, through all the ages that fields have been made red by this plant?

In 1540 the *Oleum Vitreoli dulce* was first given to the uses of men by Valerius Cordus. He had not the name Ether for it, but his oil was of kin to the ether of Frobeusius, and to the ether of to-day. Guthrie, Liebig and Soubeiran, simultaneously discovered chloroform in 1831. Did Cordus, in 1540, see or tell anything about a ghost of anæsthesia, as this lay in his sweet oil of vitriol? With chloroform filling the bottles of druggists, in 1831, was anybody to be found who had been introduced through its use to the wonderland of Euthanasia?

Let here the idea be repeated of nobody knowing what anything is. Cadmus, beyond all men of his times, saw letters. A Shakespeare, beyond all men of his times, saw use lying with letters. How many are the expressions lying with letters not yet seen by anybody? Forecast the unwritten poetry.

Here is culmination, and here is the place of Horace Wells in history. Horace Wells saw in a room at Hartford what had never before been seen by mortal man. He saw anæsthesia. It was ages before he was born that ether was materialized, and it was before he was born that nitrous oxide was formulated, and it was when he was in no way thinking about such things that chloroform was brought forth. The seer saw anæsthesia. The sight lay, as I understand, with a hurt limb of which no complaint was made. Others, many others, saw the blooded hand. In a distant State, about the same time, I myself saw the hurt limb, but none, not one of the many others saw anæsthesia. I think it is not to be denied that some saw a filmy halo that meant anæsthesia. There was a something, but what that something was they did not make out. What was seen was seen only to be forgotten. Truly, Sir Humphry Davy is to be credited with a sight and feeling of the elysium. Ego was for him differentiated by nitrous oxide from environment; but, while he felt, and saw, it was separability that was felt and seen, not anæsthesia. His expression, on coming from under the influence of nitrous oxide, is familiar: "Nothing exists but thought." Anæsthesia, the thing being truly understood, is barrier between matter which does not feel, and ego which is percipient. It is not matter that sees, hears, feels, touches, or tastes. Does the matter, temporarily composing the cadaver of a dissecting room, see, hear, feel, touch or taste? Percipient is away from it; there is neither seeing, hearing, feeling, touching nor tasting by a cadaver; a flute, separated from its player, is wood, having no song in it.

I am not to credit Horace Wells with sight of separability. The "me, and the not me," is not likely to have been seen, even by his external eye. His seership lay with a direction that people delight to call practical. Of many things, hundreds, thousands perhaps, lying with nitrous oxide, he saw one. But what a one! Here begins his glory. Here is to continue his glory. Here, so long as pain is esteemed hurtful and absence of it pleasurable, will the name of Horace Wells be upon the lips of men.

Parallels recall obligations and glory due others. Apples have fallen since first apples began to grow and ripen. Kettles, in which water was being boiled for the evening repast, have opened their iron lips and tried for numberless centuries to tell what they had to say about locomotion. Over the earth and across the face of the heavens electricity has sought vainly, until latterly, for a seer. The sun with his rays full of perfect pictures, brought as free gifts to men, could find no taker.

In the year 1665, a seer sitting under a tree at Woolsthrope, found himself able to hear fairly well what a falling apple had to tell about the moon staying where it belongs. Heron of Alexandria, holding his egoistic ear to the spout of a kettle, heard a story of steam, and wrote it down in the shape of his aeolipile. Peipin saw the cylinder. Fulton saw the steamboat. Stevenson was perhaps the first witness of a train of cars drawn by a locomotive. Thales of Miletus, got a story of electricity from a piece of amber. Daguerre, not however until the age of the world A. D. 1839, was able to take what the sun had to give of pictures. Mozart, beginning with the use of common sense, and from this passing to the advantages lying with educated sense, dropped at the last both these and put down in form of notes what alone the flowers whispered to him, having found out that education is not always the teller of things that are to be heard.

Not unnecessarily to detain, was anæsthesia, as anæsthesia, known to surgery before 1844, as it became known in that year, and since remains known?. Not nitrous oxide, not ether, not chloroform, not rapid breathing, but anæsthesia?

Who was the man of that year? Horace Wells.

Does not this settle the question?

Let, however, all deserved honor and glory associate with the names of workers and experimentalists, as these have enlarged application of the inspiration of the Hartford Seer. Ether, chloroform! what would surgery do without them? How could the world do without them? How *did* the world do without them?

It is not necessary, in this presence, to enlarge, beyond a sentence, on the benefits of anæsthesia to humanity. Are not all here assembled doing, and experiencing, each after the manner of his work, what I did and experienced only yesterday? Upon the operating table of a hospital lay, sleeping sweetly and quietly as ever baby slept, a member of our fraternity. In place of an ordinary neck was a tumor that reached from chin to sternum, and from ear to ear. Wherever, as it proved, reaching fingers could reach, prolongations of this mass extended themselves. Salivary glands, trachea, carotid arteries, jugular veins, pneumogastric nerves, all were more or less embraced and wrapped about, yet, while so horrible a dissection as was required to remove the mass went on, sleeping and dreaming quietly continued, nor was any consciousness had by our brother of his terrible experience until an hour later, when he awakened, snugly tucked away in one of the most comfortable of beds, the tender hand of a Godly nurse wiping away the cold sweat drops standing threateningly upon his forehead.

Consider, in contrast, a picture familiar before the day of Wells' inspiration. A mother, her heart welling out in tears, limbs trembling so as scarcely to afford her support, helpless misery characterizing her countenance, despair striking at her with its thongs of flame, follows into a hospital operating amphitheatre a nurse, who carries her first born, which is being brought to the table. Alas, helpless indeed is the mother. How, more than gladly, how a thousand times more than gladly, would she lie down in place of the child. Cries of mother and child moan through the hospital, and the least sensitive feels his cheek pale. The crucial moment has come. The child is placed and held by force upon the table. The mother is torn away. For a single moment eyes of mother and child have met in parting. A loud, frightened, despairing cry from the child rings from ceiling to floor of the room. The mother drops in a heap, and is carried out a raving lunatic. She raves about and curses God, as being without pity or mercy.

Let a concluding picture, having relation with the first, help cover the intermediate one; an intermediate one which extended, alas, from the days of the first surgical performance to the year of grace, 1844.

A mother brings to a hospital a child whose deformity requires the knife for its correction. Conscious of the power of anæsthesia, the surgeon talks to the parent, while all the while the little patient, pleased and inveigled by the sweet smell of chloroform, is anæsthetizing itself. The cutting is done. The child has a dream of roses and gardens and wide fields. The mother has placed in her arms her restored offspring. She has no tears, no words; her contact has been alone with beneficence. She is overwhelmed by the mystery she has met and passed. She says: "Our Father which art in heaven.". She says and feels there is a God of pity and mercy.

Look at the name of the maker of these pictures of the new time. It reads, Horace Wells.

To what extent anæsthesia has cultivated sensibility, I leave every surgeon to judge. Who, if suddenly transplanted into the olden times, being possessed of his present knowledge of anæsthesia, could handle a knife without cutting everywhere else than where it would be desirable to cut, otherwise dying shortly out of sympathy for his patients. Could he say, "Merciful Father which art in heaven," in place ot thinking "pitiless devil who is in hell?" Alas, how near to hopeless atheism may ignorance bring a man. Hail that knowledge which shows God and Father everywhere. Hail to all poets, to the music-hearers, to the seers of forms of every kind. Let statues be erected for them in the squares. Let tablets of enduring brass mark their working places. Let us place and hold them with the immortals.

Hail to him who has proven to be, perhaps, the greatest of the seers, Horace Wells.

At the close of the address of Prof. Garretson, the chairman announced that'the consideration of a plan for a permanent memorial to the discovery by Horace Wells would be entertained.

Dr. L. D. Sheppard offered some resolutions drafted by the Executive Committee, in reference to the discovery of anæsthesia, which were approved with unanimity.

Dr. R. Huey, of Philadelphia, moved that a committee be appointed by the president of the American Dental Association, to secure funds for the erection of a memorial in Washington City.

The motion was carried, and the president announced that the committee would be subsequently named.

Dr. G. Q. Colton was then introduced, and gave his personal recollection of the great event, in which he was privileged to be one of the prominent actors.*

Mr. Charles T. Wells, of Hartford, Conn., the only son of the great discoverer, was also presented to the audience.

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*His relation did not differ from that given on the preceding day at Hartford, and an abstract of it will be found in the report of that meeting on a preceding page.—[EDITOR.

THE BANQUET IN THE EVENING.

A magnificent banquet was held at the Union League, at 6.30 P. M. Dr. E. T. Darby, of Philadelphia, presided as toastmaster. Gen. Joseph B. Hawley, U. S. Senator from Connecticut, responded to the toast, "The Horace Wells Discovery—Its National Significance." He said: How many thousand years were added to human life by the result of the great discovery! How many years of agony were thrown into the bottomless pit of oblivion! He knew the office in which this discovery was made. He knew the gay and frisky Col. Sam Cooley, who danced about and barked his shin, and was the innocent cause of the brilliant discovery. Truman Smith, the venerable lawyer of Connecticut, and scores of Hartford's great men, testified to the validity of Wells' claim. He had been present the day before at the anniversary celebration in Hartford. It took those eighty-year-old enthusiasts until midnight to erect the bronze tablet. He felt honored at being present at both celebrations.

Prof. James Truman, of the University of Pennsylvania, responded to the toast, "Anæsthesia as a Dental Discovery." Prof. Truman was reminded of the story of the "Ugly Duckling," that came out late, was picked at, and loved by no one. But it was able to swim and fly, and was adopted by a tribe of wild ducks, and afterwards became a beautiful swallow. Dentistry came in late—in the last half century; but to-day her representatives have assembled here from many states, in a high professional spirit, to do honor to one of her greatest men. Horace Wells lived in the period of transition in dentistry, when every man's hand was against his neighbor in professional matters. He was broader. He reached out after the great world that Goethe loved. He went to the center of medical education—Boston—and was hooted out of the medical presence in disgrace. But every age has stoned its prophets, as every age will continue to do. Dr. B. W. Richardson, of London, in the last few weeks, in Longman's Magazine, has tried to tear the laurel from Horace Wells and place it on Sir Humphrey Davy. The parable of the sower is applicable. Priestly was the stony ground. Sir Humphrey Davy was the poor soil—he was a dreamer. The receptive brain of Horace Wells was the good soil that bore fruit in the amelioration of pain. When for the first time modern anæsthesia was exhibited, amid the anxiety of the surgeon, the excitement of the students, when for the first time they beheld a patient passive under the surgeon's knife, did anybody think of Sir Humphrey Davy? When we look back over the great battles, the terrors of hospitals and the accidents of life, who can aggregate the benefits of anæsthesia? It was in the humble home of the Hartford dentist that the still small voice whispered in the wilderness of suffering. And that whisper will echo and re-echo until the cry of agony shall be silenced forever. O dentistry! though not the first-born of this our nineteenth century, in our heart of hearts we enshrine thee. Thou hast given anæsthesia to the world.

Prof. J. William White, of the University of Pennsylvania, responded to the toast, "Anæsthesia as a Factor in the Evolution of Surgery." The discovery of anæsthesia is a priceless gift to surgery. Like the enchanted genii of the Arabian nights, it transports one from conscious suffering to the dreamy slumber of oblivion. If it had contributed nothing more to the victories of surgery than the transformation of a screaming sufferer into a plastic, unconscious patient for the surgeon's knife, it had added incalculably to its efficiency. But that is the least of its blessings. It brought possibilities of an incredulous advance. Hundreds of operations, undreamed of in 1844, have saved the lives of countless thousands. The processes of disease and trauma, in regions uninvaded in pre-anæsthetic days, were helpless and hopeless before the inspiration of Wells, fifty years ago. The advance of this period has outstripped that of eight hundred years. In it, aseptic and antiseptic surgery has developed, and almost wiped out certain forms of suffering, disease and death. Surgery has not reached its culmination. Investigation, research and experiment are advancing rapidly. The prizes are still great; tubercle and cancer remain to be conquered, and though we may not live to see it, it will ultimately be accomplished. The age is full of glorious men, vigorously anticipating the splendid hopes of the future. All glory to Horace Wells, the builder of the foundation, and the layer of the corner stone.

Professor Horatio C. Wood, of the University of Pennsylvania, responded to the toast, "The Debt of Medicine to Anæsthesia." Once there were born twins. One was lusty and eager, always shouting its own praises; at the fore front of battle, reveling in blood, accident and death. The other was modest and retiring, thinking much but speaking little. The one was Surgery, and the other Medicine. To the twin Surgery, anæsthesia came as a great gift. To Medicine, it did not at first appear to be such a great boon. But there are now many diseases that attack the mortal frame that could not be relieved without the great gift from Hartford. Were it not for anæsthesia, few would have the courage for vivisection, and were it not for vivisection, there were no modern medicine. Anæsthesia has made modern physiology, antiseptic surgery and advanced medicine the great wonderful structure that we stand off and contemplate with such reverential awe. That is what anæsthesia has done. Not simply to quell pain momentarily, but to make possible modern medicine. He hoped the dental profession would erect a monument to one of their guild who was such a benefactor to mankind. He did not know of a single statue erected to a medical man in the United States. When Leidy died, the greatest man Philadelphia ever produced, the one man who was crowned by the immortal leaf of the French Academy, the newspapers had only five or six lines about him.

Col. Alexander McClure, editor of the *Philadelphia Times*, responded to the toast, "The Mastery of Pain from the Standpoint of the Layman." Col. McClure remembers the transition of dentistry from a critical condition to its present position of wonderful achievement. He remembered when the blacksmith of the village pulled teeth with a gimlet having a screw in its end, and the itinerant dentist "stood" one day at one place, and the next at another. He recollected the introduction of anæsthesia into the Faculty, forty-five years ago. He was then publishing a country newspaper — the only time in his life when he thoroughly understood the newspaper business. He and his apprentice instituted a series of experiments. The apprentice proposed to have a young physician give him chloroform, and the speaker was quite willing that it should be. It was administered with great success, every case of type being upset. He claimed some credit for its advance. About thirty years ago he was suffering with an aching wisdom tooth. He had read of the gas. He came to Dr. Thomas, saw the list of some eighteen hundred persons who had taken it successfully, but he saw no instruments. He took a deep inhalation — then another — then———! Suddenly he woke up, and asked if the tooth had been pulled. He was assured by seeing the offending member. Since then, when he has a tooth to be extracted, he quits work at mid-day, walks quietly to the dentist's office, takes a whiff of gas, and all is over. Dr. White tried to cut him to pieces seven times, but he was ignorant of the pain. He was satisfied that his life had been saved by the operation, and but for anæsthesia he would not have been present.

Prof. Wilbur F. Litch, of the Pennsylvania College of Dental Surgery, responded to the toast, "The Development of our Knowledge of Anæsthesia." He said the discoverer of anæsthesia had done more to promote the happiness of mankind than all the philosophers, from Sophocles to Mill. In 1832, Velpeau declared painless operations in surgery a chimera; but, later, he did an amputation under ether. The ancients sought for some analgesic in mandragora, hyoscyamus, opium, and hemp. The stupefying effects of alcohol were more safe and effective. The marvel is why alcohol to its full intoxicating effect was not systematically employed. Emerson says, "Years teach much which days never know." Ether was known five hundred years, and nitrous oxide seventy years before Wells' time. Anæsthesia is a flower that has blossomed slowly on the cross of suffering. It is recorded that the Romans offered a lethel draft to Him who bore the tpyification of human suffering. Humanity to-day drinks of subtler influences. He referred to the report of the Hyderabad commission on chloroform, and mentioned the use of cocaine in the production of local anæsthesia. Ideal anæsthesia, one that was perfectly free from danger, remained to be discovered. At present, nitrous oxide with oxygen is the best, but for mechanical difficulties.

District Attorney George S. Graham, of Philadelphia, responded to the toast, "The Medico-legal Aspect of Anæsthesia." The toast reminded him of Daniel O'Connell calling a man a nefarious ruffian, because the phrase was high-sounding. The story of a man knocking a hole in a cellar wall to let the dark out was applicable to it. Anæsthesia in its broad sense, including alcohol, made many subjects for the legal surgeon's knife. When Dr. Thomas gave him gas for the extraction of a tooth, he heard a seraphic symphony from the heavenly spheres, but when he awoke, he found the music came from a music-box, and was administered with malice aforethought. That was the first connection of anæsthesia with the law. He said law was not in sympathy with vivisection—he once lost a dog himself. The highest tribute from a sister profession is the reiteration of the praise bestowed by one's own profession. If a man lives in their memory, and is honored as the discoverer of a great good to suffering humanity, that is the loftiest pedestal on the footstool of God. Esteem and honor to pioneers in discovery and advancement. The whole world joins in sweet acclaim of praise to the memory of Horace Wells.

Rev. S. D. McConnell, of Philadelphia, responded to the toast, "The Humanitarian Aspect of Anæsthesia." Most parsons have learned the ability to escape from the text, but he would rather be the discoverer of anæsthesia than to be any man that ever lived. When all the achievements of this century shall be forgotten, this one great controlling event that had happened once in the history of humanity will remain. The measure of sensibility to pain is the measure of civilization. Low civilization is comparatively indifferent to pain. This is an age of physical anæsthesia—of moral and mental anæsthetics. All the philosophizing about pain can make us bear with equanimity only some other fellow's pain. Pain is demoralizing, and its relief is elevating. It begets gentleness of manners and thought, tenderness and compassion. The man who has done this, has taken out part of the unspeakable anguish of parturition, has saved innumerable lives, has enabled timid souls to look serenely upon suffering, and walk triumphantly to the end.

Dr. G. Q. Colton related some amusing experiences in connection with the administration of nitrous oxide and tooth pulling, and concluded with the masterly advice of Polonius to his son Laertes.

Mr. Charles Wells, the only son of the immortal dentist, gave some personal recollections of his father, after which the guests separated, and the celebration of one of the very greatest events in the history of mankind was over.

CORRESPONDENCE.

Editor Dental Practitioner and Advertiser:—In your report of the American Dental Association, I find, on page 199, October number, the following:

> "Section I., Prosthetic Dentistry, Chemistry and Metallurgy, made its report, at the close of which Dr. Sharp, of Binghamton, N. Y., exhibited a dental furnace intended for laboratory purposes, especially for porcelain and aluminum work. The furnace was generally commended, but it rather took the breath away from some of the older members to see such an invasion of established precedents in the Association, it having been in the past a rather established principle that no apparatus which was on sale should be exhibited in open session. The rule had, however, been infringed before, notably at the last Saratoga meeting, but it had not been at the recommendation of the chairman of a section."

I am not aware that there are any laws or standing resolutions to prevent the introduction of such subjects to the meetings of the Association.

The last paragraph would seem to imply that the chairman of the section was responsible for the exhibition of this apparatus in "open session," but the following is the true version of the facts: The secretary of this section first saw the furnace at a meeting of the New Jersey State Dental Society, July 18, 1894, and invited Dr. Sharp to bring it to the First Section meeting of the American Dental Association. In compliance with this invitation, Dr. Sharp appeared with it before the section, at Old Point Comfort, on Tuesday, August 7th. At this meeting there were twenty-three members of the section present, and by a unanimous vote it was recommended to be presented to the Association. The same action was taken with Dr. How's wire coiler, and Dr. Daly's patented gold lining for rubber plates. In fact, whatever was presented,—papers, appliances, etc.,—to the attention of the Association, *by this section,* was so done by a vote of the members, and not by the individual action of the chairman or secretary. It is, of course, to be regretted if the exhibition of Dr. Sharp's furnace deprived any member of his breath, but I fail to understand why it should produce this effect, when the respiration of the association did not appear to be at all disturbed by the presence of quite an array of instruments and appliances which were as much "on sale" as this breath-stealing device.

ALONZO BOICE,
Secretary of Section.

NOTE.—There was no imputation, either direct or implied, that the Chairman introduced any matter that was not approved by the section. But this advertising of proprietary articles in a professional meeting has long been a matter of offense to many, and should be sternly frowned upon by every one who claims to be a professional man.—[EDITOR.

THE DENTAL PRACTITIONER
AND ADVERTISER.

DR. W. C. BARRETT, ... EDITOR.

BUFFALO, N. Y., JANUARY, 1895.

THE DISCOVERY OF ANÆSTHESIA.

The eleventh day of December, 1844, marks one of the most memorable epochs, not only in dentistry, but in the history of the world, for upon that day was first given to mankind one of the greatest boons ever bestowed upon the suffering. Previous to that time, the operating-room of the surgeon was a chamber of horrors, for it was the scene of tortures almost unimaginable. Relief from pain, the prolongation of life, the making of existence tolerable, were too often purchased only by groans and anguish almost worse than death itself. The surgeon's knife was invested with terrors that even the chambers of the Spanish inquisition knew not. The awful mental shock greatly increased the mortality of all surgical operations, and the fear of the operating-table was a nightmare that haunted the nights and days of thousands.

From all these terrors and alarms, Dr. Horace Wells, the dentist, of Hartford, Conn., gave the world relief forever, and became a greater benefactor to mankind than Harvey or Jenner, or any of the other great lights of medical science. Compared with his deathless fame, what is the renown of Alexander, or Cæsar, or Napoleon? He brought relief from the suffering which they but caused. If the memory of Nelson or Wellington should be commemorated by monuments an hundred feet high, all the pyramids consolidated into one would be unworthy the fame of him who abated the agony of the wounded, hushed the cries of the suffering, gave peace and rest and sleep to the agonized, and saved innumerable lives by bringing within the range of possibility operations before unthought of, and by conserving the strength of those weakened by anguish, enabled them successfully to undergo trials under which they must have sunk, only for the blessed boon given the world fifty years ago.

No claim is put forth for Dr. Wells that he discovered nitrous oxide gas, or ether, or chloroform. He was not the first that had received immunity to pain from the inhalation of obtunding agents. But he was the first who recognized the peculiar properties of what are now called anæsthetic agents. Exhibitors had for years been administering nitrous oxide gas for its exhilerating effects before Wells saw in it the wondrous lethean properties which it possesses, but he was the first to demonstrate its power to obtund, and to make public its peculiar virtues, and thereby to snatch from death immortal fame, and to write his name near the top of the list of human benefactors.

It was but fitting that the anniversary of this deathless discovery should be appropriately observed, and that dentistry, which has grown to such vast proportions since the day of Wells' great glory, should take the lead in it. The City of Hartford, which was the home of Wells, properly took the initiative, and the representative society of American dentists followed its lead, while all over the land men gathered in smaller bodies to commemorate the occasion. To Dr. James McManus, of Hartford, more than to any other one man, is due the credit for the proper recognition of the importance of the event. As long ago as 1870, he introduced the resolutions in the Hartford Dental Society which resulted in the erection of the beautiful statue of Wells that now adorns the park of that city. He was active in promoting the celebration of this fiftieth anniversary, and with Dr. G. L. Parmele, of Hartford, and Dr. Civilion Fones, of Bridgeport, as a committee of management, a grand celebration of the event has been held in Hartford, and what is better, the beautiful tablet, a cut of which is contained in this number, has been erected upon the very spot where the first administration of any agent for anæsthetic purposes was made. All honor to these noble and unselfish men, who have carried to such a successful termination so noble an undertaking.

But the local observance of the event was not believed to be sufficient. The whole world should have joined together, but as it was impracticable to attempt so grand a celebration, it was resolved to unite the dentists of America. The part taken by this journal in that good work will always be a source of gratification, for it called attention to the matter in as emphatic a manner as was possible, and the suggestion was at once acted upon by many of the noble men of whom Dentistry boasts. At the last meeting of the American Dental Association, held at Old Point Comfort, an organization was effected, and that society gave to the movement the prestige of its approval. That resulted in the memorable meeting held in Philadelphia, and the able addresses delivered upon that occasion.

In this number, we present as full a report of both of these meetings as the space at our disposal will permit. The addresses will all be published in full in due time, and the record of the meetings made complete. The lessons of the occasion will not be lost, for dentistry and the world will be taught that he who benefits mankind will never be forgotten. A little of the glory that encircles the brows of the immortal Wells is reflected upon every practitioner of the profession which he followed, and they are admonished that the man who is inspired with a desire to benefit his fellow-men need not lack for opportunities to exert his benevolence. The course of Wells in using his utmost efforts to spread the knowledge of the boon which he believed that he had given to suffering humanity, regardless of any personal gain or credit which he might derive from it, shines in dazzling contrast with that of Morton, whose name might have been more honorably coupled with that of the man from whom he derived his knowledge of anæsthesia, had he not attempted to coin the splendid achievement into dollars by patenting the process, and thus proving his selfishness and lack of professional feeling.

The celebration at Hartford will ever have a special significance, because it permanently chronicled the testimony of the surviving associates of the immortal Wells as to the originality of the discovery. All the attending circumstances are detailed, and the record thus made complete. We commend this unimpeached and unimpeachable testimony to the attention of those who have been misled by the claims put forth for Morton, who, it is now positively demonstrated, derived his knowledge of anæsthesia from his former preceptor, Horace Wells.

Henceforth, the eleventh day of December should become a festal day in dentistry, and each return of it should be marked by dinners and addresses and social rejoicings over an event that conferred such honor upon our profession, and made the world forever a debtor to dentistry.

SENSITIVE DENTINE.

It was lately asserted by one who stands as a teacher, that there can be no sensitiveness where there is no nerve, and the remark has been frequently repeated and seemingly accepted as aphoristically true. Whether this be so or not depends upon what is meant by sensitive. Sensation, sensory, sensibility, sensitive, sensitized, sensorial, sentient, and sense, are all derived from the Latin *sensus*, to feel. The signification of the word sensation, as it is ordinarily employed, is an impression conveyed to the centers by an afferent nerve, and this implies the functional activity of nerve tissue. That impression may be pleasurable or painful, or it may even be unrecognizable. There may be a reflex action produced by an efferent nerve, which is the result upon an afferent filament of an impression that was unknown and unfelt at the time. Hence, sensation does not always imply feeling, but the mere ability to respond to irritation.

A sense is a faculty which, through the aid of specially developed organs, is able to receive either external or internal stimuli, and to transmute them into impulses which, when conveyed to the sensorium, we call sensations. These sensations usually imply feeling, or consciousness of them, but not necessarily so. It is probable that the author of the exceedingly indefinite remark quoted, intended to assert that a tissue without a nerve supply was incapable of receiving and conveying recognizable impressions, or those which shall result in efferent impulses. This is not true, for there are too many instances in point which disprove it. All unicellular organisms are without differentiated tissue, and yet they respond to external and internal stimuli. The amœba withdraws itself at once in response to irritation. The lower jelly-fishes, the protozoa, including sponges and rhizopods, are sentient in the interpretation of endeavoring to escape disagreeable impressions. Even vegetables are in some instances responsive to rude assaults, and the sensitive plant shrinks from the touch of a disagreeable object. The dentine of a tooth, when in an irritable condition, becomes exquisitely responsive to external impressions, and yet it is without nerves or nervous tissue supply.

The secret of this seeming physiological contradiction undoubtedly rests in the physical structure of protoplasm, which is the basis of all animal and vegetable life. It is composed largely of the proteids, and is that which contains the essential elements of all vital tissues. It is the indispensable constituent of every living cell, and in this sense may be considered the essence of life. Of itself it is the vital principle of bone, muscle, connective tissue, and nerve, and is endowed with some of the properties of each. It enables the amœba to move without muscles, to contract without nerves, and to digest without organs. By its aid the infusoriæ keep their cilia in constant action, and thus fulfill the muscular functions of organized existence. It is, in fact, an epitome of structural life, and it forms the broad plane upon which vegetable and animal meet, and in which their separate lives blend into a harmonious unity. It is the initial point from which radiate the various branches that have been differentiated into all functional vitality. Viewed from the protoplasmic standpoint, there is no chasm which separates the lowest vegetable from the highest animal. It is the common ground upon which existences stand, and from and through which the evolutionist traces every development of organic matter.

The dentinal fibrillæ, the gelatinous albuminoid contents of the dentinal tubuli, partake of this protoplasmic character. They are without structure, and hence contain no nerve tissue. But they are composed of the elements that enter into the structure of tissue, they embrace the proteids that are found in the germinal part of the seeds of plants, and like the structureless sarcode of the protozoa, while without sentient feeling they are capable of response to external impressions. The dentinal tubuli have this albuminoid composition, and they are in relation with organized tissue. Their connection with the tissue of the pulp is continuous, and that tissue is fully organized and has an abundant nerve supply, through which the impulses originally received by the protoplasmic, gelatinous dentinal fibrillæ, are conveyed to the sensorium.

Protoplasm being non-vascular, it cannot exhibit the usual phenomena of the inflammatory process, but that there may be some of the pathological changes that attend that condition must be indisputable. If it responds to external stimuli it must also be responsive to that which is internal. If it is subject to irritation at all, the continuous application of provocatives must result in an exacerbated, exalted receptive condition, that makes it unduly and abnormally susceptible to exasperative agents. And that is just the condition of exposed and irritative dentine. In its normal condition, while the fibres may convey external impressions, it will be but faintly, and they will not be of a distinctly painful character. Under the goadings of repeated stimuli and of continuous exposure to external influences, they take upon themselves that exalted condition that greatly increases their receptive and transmissive power, and the impressions conveyed to the pulp and to its nervous filaments, and thence to the nerve centers, become of a distinctly painful character.

The dentinal fibrils being of an albuminous nature, when their connection with living matter is severed and they are subjected to the influence of the air and external agents, coagulation will be spontaneous, as this is the first step in the process of their melting and breaking down.

SCIENCE IN DENTISTRY.

At the Mid-Winter Fair Dental Congress, held in San Francisco, last summer, Dr. E. S. Talbot aroused the criticism of some of our occidental friends, by the assertion that "nothing new has been written in dentistry within the past twenty years." He subsequently explains this by earnestly saying that "what the scientific dentist of to-day thirsts for is something new in science and original work." He also excepts the work done by Prof. Miller, of Berlin.

To say that "nothing new has been written in dentistry for twenty years," is rather a bald, as well as bold statement. It rules out the books and the writings of Dr. Talbot himself, and we are unwilling to admit that he has not done true original work, and said real original things. He has had the credit of doing it, at any rate, and no one has yet dared to accuse him of plagiarism. Undoubtedly he meant to imply true *scientific* work, and it is with the loose and indifferent use of this word that the mischief lies. There is not a cross-road, peripatetic dental tinker, who is not fond of speaking of the "science" of dentistry, and the "scientific" work which he is himself doing, when he merely means the mechanical excellence to which he has attained. There is no "science" in the making of an artificial denture, nor the insertion of the most perfect filling. The man who does either of these is not necessarily even a professional man. He may be an excellent artisan, a finished mechanic, but a liberal profession means something more than mere manual labor—than digital dexterity. The work of the real professional man can neither be weighed or measured. It is the labor of the brain.

To be sure, the artistic dentist must use his brain in the construction of good work, but so must the shoemaker. Scientific work means something even beyond true professional labor. In its restricted meaning it implies something that is in no way eonnected with an avocation. It is the determination of truth for truth's sake. It is demonstrated knowledge. It is labor that can be performed but once, for when the scientific truth is demonstrated it is finished for all time. To continue to do this over and over again may be to *teach* science, but it is not scientific work, in its true signification. Much less is it science when a man performs a definite task for the sake of the remuneration that it brings. That is handicrafture — it is work at a trade. When Miller went into his laboratory, and for years under true intelligence and in accordance with known philosophical and scientific law, for the mere sake of solving an undiscovered problem, faithfully wrought at his task, he was doing true scientific work. But when he returned to his office and applied the law that he had discovered in his every day practice, he was merely doing professional work.

When Jenner began his experiments with the virus of cow-pox, led thereto by the observation that milk-maids who had been inoculated with it were immune to small-pox, and when he persisted in his effort to discover the true cause of such immunity, he was doing real scientific work. But the vaccination that is performed by physicians in conformity to the law that Jenner discovered, is not science. It is merely professional labor. If it be done properly it is not therefore scientifically performed; it is only skilfully accomplished. If it be done bunglingly it is not proper to say that it is unscientific, for it may have been conducted in accordance with scientific law, but that the operator was maladroit and inexpert. Science is philosophical, systematic knowledge. It is not mere manual dexterity, and herein lies the mistake that is so often made in our meetings, when the two are confounded.

In this sense it is true that there has, for twenty years, been too little scientific work done by dentists, but the assertion that none has been accomplished is not warranted by the facts. We could point out a score of men who have been doing true scientific work, and who have accomplished scientific results. The statement that nothing new has been written must fall with the other, for if any scientific discoveries have been made the record of them must be new and original.

CURRENT NEWS AND EXCERPTS.

THE ANNIVERSARIES.

The principal professional event of the past month has, of course, been the celebration of the Semi-centennial of the discovery of Anæsthesia. The meetings at Hartford and Philadelphia were entirely different in character. The former was devoted to the unveiling of the memorial tablet, and to the eliciting of the testimony of surviving associates of Dr. Wells as to the originality of the discovery. It was a grand success, and has served to dispel any possible illusions that might have been entertained as to whom the honor should be given. It was held the night before the anniversary, that those present might be able to attend the Philadelphia meeting.¶

This was also a pronounced triumph, although the attendance of local dentists in the afternoon was not what it should have been, while there were very few medical men present. One would have thought that every physician would have been eager to honor the memory of the man who had done so much for medicine, but they seemed strangely indifferent to the event.

The greater number of those who attended at Association Hall were students from the dental colleges of the city. These turned out in great numbers, and those from each school were enthusiastic in their reception of the representatives of their faculty upon the programme. The ovation given Prof. Garretson by the undergraduates from the Philadelphia Dental College, and from the Medico-Chirurgical College, was a thing long to be remembered.

The paper read by Dr. Fillebrown was an admirable condensation of the history of the discovery, and it was warmly received by all. That of Prof. Garretson consisted of two parts, the first of which contained what he called the dry facts of the subject, and which he placed in the hands of the Publication Committee without reading. The second part is published in full in this number. It should be read more than once, for its full significance will not be grasped immediately. His standpoint was so elevated, his conception so grand, his philosophy so profound, that the unthinking man will not perceive all its beauties. But the pathos, the feeling which he exhibited when he briefly sketched and contrasted scenes in the operating-room before and since the introduction of anæsthesia, will not soon be forgotten by any one who was privileged to be a listener.

The banquet in the evening was more representative than was the afternoon meeting. The speeches were in tone and matter far above those usually heard on such occasions. This was especially true of those of Profs. Truman and Litch. Indeed, they were models of what such addresses should be. Profs. J. William White and H. C. Wood very ably represented the medical profession, and made a deep impression upon the listeners, while the eloquence of Rev. Dr. McConnell, when he declared that from a humanitarian point of view more honor was due Horace Wells than should be accorded to any other mortal man who ever lived, thrilled every heart. Altogether the meeting was one long to be remembered, and its influence for good will not soon pass away.

IN BUFFALO.—Dr. F. T. Van Woert, of Brooklyn, the President of the New York State Dental Society, has engaged to give a special course of lectures in Operative Dentistry, to be combined with clinical instruction, at the Dental Department of the University of Buffalo, during the winter, and will visit the City regularly for that purpose. Dr. William Carr, of New York, has already spent some time at the school, giving instruction, and Profs. Bödecker and Francis will commence their special courses after the holidays.

THE WELLS MEMORIAL TABLET AT HARTFORD.

At the request of the Committee we publish the names of those who contributed to the erection of this beautiful and artistic mural monument.

CONNECTICUT.

Hartford.—Geo. L. Parmele, Jas. McManus, Charles McManus, Henry McManus, L. C. Taylor, N. J. Goodwin, John N. Wells, E. R. Whitford, J. F. Wright, F. W. Dunham, Edward Eberle, Monroe Griswold, Chas. K. Bryant, J. F. Doebler, H. J. Fisk, L. H. Fisk, Chas. H. Riggs, S. L. G. Crane.

Manchester.—G. M. Griswold.

South Manchester.—M. M. Maine.

New Haven.—Edward S. Gaylord, Daniel A. Jones, Mrs. Jones, W. H. Metcalf, F. W. Brown, A. B. Smith, Robt. T. Ehrill, W. T. Holmes.

New London.—Edward Prentis, R. W. Browne, A. W. Crosby, W. W. Sheffield, F. S. Norkett, J. R. Linsley, A. A. Bishop.

Meriden.—C. C. Barker, P. A. Powers, R. K. MacVean, D. C. McMahon, J. J. Flanagan, L. T. Doolittle.

Branford.—David W. Johnson.

New Britain.—R. C. Dunham, A. E. Wales, P. J. McDonald, C. B. Erichson.

Naugatuck.—W. E. Gerrish.

Niantie.—J. G. Champlin.

Norwalk.—Winfield H. Baldwin.

Bridgeport.—Civilion Fones, Alfred C. Fones, A. E. Fones, C. W. Strang, C. B. Adams, G. F. Williams, W. L. Ferris, J. S. Cavioli, G. F. Barden, L. E. Sage, C. F. Gibbs, C. B. Baker, Frederick Hindsley, C. H. Porter.

Danbury.—Wm. J. Rider, W. H. Rider, J. C. Whaley, S. W. Chipman.

Danielsonville.—O. C. Sharpe.

Ansonia.—M. C. Hitchcock.

Bristol.—L. L. Beach, J. S. Wilson.

Moodus.—Russell Arnold.

Middletown.—O. S. Watrous, A. P. French, A. H. Fagan, C. P. Graham.

Windsor Locks.—F. T. Murlless, F. T. Murlless, Jr.

Wallingford.—J. T. Barker.

Thompsonville.—B. H. Thornton.

Saybrook.—B. W. Leonard.

Southington.—A. J. Cutting.

Jewett City.—H. Dryhurst.

Putnam.—A. H. Strahan, W. H. Sharpe.

Lakeville.—G. L. Hurd.

Rochville.—W. H. Loomis, W. C. MacGeorge, Geo. W. Allen, R. R. Roberts.

Winsted.—S. S. Tuller, G. C. Hubbell, F. E. Roys.

West Winsted.—W. T. Smith, Robert M. Burwell.

CALIFORNIA.

San Francisco.—W. J. Younger, C. L. Goddard.

DELAWARE.

Wilmington.—C. R. Jefferis.

Middletown.—T. H. Galpin.

Laurel.—J. M. Hitch.

IOWA.

Iowa City.—W. O. Kulp, A. O. Hunt, Dental Department, Univ. Iowa.

ILLINOIS.

CHICAGO.—Truman W. Brophy, A. W. Harlan, Louis Ottofy, J. N. Crouse, L. L. Davis, Frank H. Gardiner, C. N. Johnson, J. S. Marshall, Geo. H. Cushing, W. V. B. Ames, Eugene S. Talbot, L. P. Haskell, E. D. Swain.

INDIANA.

FORT WAYNE.—Seneca B. Brown.

KANSAS.

TOPEKA—A. H. Thompson.

KENTUCKY.

LOUISVILLE.—Francis Peabody, C. L. Seymour, B. O. Doyle, J. W. Wallace, H. B. Tilleston, E. M. Kettig, C. E. Dunn, J. H. Baldwin, W. S. Smith, C. G. Edwards.

LOUISIANA.

NEW ORLEANS.—George J. Friederichs, J. Rollo Knapp, Joseph Bauer.

MAINE.

AUGUSTA.—E. J. Roberts.

PORTLAND.—D. W. Fellows.

MARYLAND.

BALTIMORE.—M. W. Foster, William B. Finney, B. Holly Smith, T. Solers Waters, W. S. Twilley.

WASHINGTON, D. C.

H. B. Noble, Williams Donnelly, H. C. Thompson, M. F. Finley, Daniel McFarlan.

MASSACHUSETTS.

BOSTON.—Jacob L. Williams, Eugene H. Smith, Thos. Fillebrown, Dwight M. Clapp John T. Codman, Waldo E. Boardman.

CAMBRIDGE.—R. R. Andrews.

WORCESTER.—C. Frank Blevin.

NEW BEDFORD.—E. V. McLeod.

SHELBURNE FALLS.—E. A. Stebbins.

WARE.—W. O. Barrett.

NORTHAMPTON.—W. H. Jones, J. N. Davenport.

PITTSFIELD.—S. S. Stowell.

SPRINGFIELD.—C. T. Stockwell, N. Morgan, J. Searle Hurlburt, J. K. Wiley.

HOLYOKE.—O. H. Hastings, G. A. Maxfield.

MISSOURI.

ST. LOUIS.—H. J. McKellops, A. H. Fuller, E. S. Chisholm, A. J. Prosser, J. G. Pfaff, DeCourcey Lindsley, L. A. Young, P. H. Morrison, J. B. Newby, Emma Eames Chase, Geo. W. Applegate, Geo. A. Bronson, F. F. Fletcher, J. B. Vernon, Wm. M. Conrad, Walter B. Bartlett, H. J. Cassett, H. H. Keith, Wm. E. Lange, J. E. Gusheider, M. R. Windhorst, J. W. Wick.

KANSAS CITY.—J. D. Patterson.

MACON.—T. W. Reed.

MICHIGAN.

DETROIT.—George L. Field.

NEW HAMPSHIRE.

NASHUA.—Geo. A. Bowers.

MANCHESTER.—C. W. Clements.

NEW JERSEY.

MONTCLAIR.—S. C. G. Watkins.

NEWARK.—Chas. S. Stockton.

Central Dental Association of Northern New Jersey.

NEW YORK.

NEW YORK CITY.—Wm. Carr, E. A. Bogue, Frank Abbott, New York College of Dentistry, M. L. Rhein, G. S. Allen, C. F. W Bödecker, F. Hasbrouck, Benjamin Lord, V. H. Jackson, John T. Metcalf, J. Morgan Howe, A. L. Northrup, S. G. Perry, J. Bond Littig, Chas. E. Francis, Benjamin C. Nash, J. H. Mayer, W. W. Walker.

BROOKLYN.—Wm. Jarvie, Chas. D. Cook, A. N. Chapman, H. G. Mirick.

BUFFALO.—Wm. C. Barrett, Theo. G. Lewis.

ALBANY.—E. C. Baxter.

ELMIRA.—F. B. Darby.

SYRACUSE.—S. B. Palmer.

YONKERS.—R. A. Fones.

NORTH CAROLINA.

RALEIGH.—V. E. Turner.

OHIO.

CINCINNATI.—J. A. Callahan, H. A. Smith.

CLEVELAND.—C. R. Butler, S. B. Dewey, H. L. Ambler, W. H. Whitslar.

KENT.—L. P. Bethel.

OREGON.

PORTLAND.—Geo. H. Chance.

PENNSYLVANIA.

PHILADELPHIA.—Edwin T. Darby, Thos. C. Stellwagen, Alonzo Boice, E. H. Roberts, C. N. Peirce, J. D. Thomas, Robert Huey, James E. Garretson, S. H. Guilford, Wilbur F. Litch, J. Foster Flagg, Henry I. Dorr, Jas. Truman, D. D. Smith, J. Ashley Faught, Louis Jack, W. G. A. Bonwill, C. J. Essig, Theodore F. Chupein, E. C. Kirk, Daniel N. McQuillen.

PITTSBURGH.—J. G. Templeton.

ERIE.--W. E. Magill.

RHODE ISLAND.

NEWPORT.—C. A. Brackett.

WOONSOCKET.—A. W. Buckland.

PROVIDENCE.—Wm. Barker, G. G. H. Ames, F. N. Seabury.

SOUTH CAROLINA.

COLUMBIA.—Thos. T. Moore.

SPARTANBURGH.—Thos. J. Calvert.

CHARLESTON.—L. P. Dotterer.

TENNESSEE.

NASHVILLE.—W. H. Morgan, H. W. Morgan, Gordon White, R. P. Freeman, J. Y. Crawford.

TEXAS.

WACO.—W. R. Clifton.

VERMONT.

BURLINGTON.—Jas. Lewis.

ST. JOHNSBURY.—Geo. F. Cheney.

VIRGINIA.

FARMVILLE.—W. W. H. Thackston.

STAUNTON.—Jas. Johnston.

WASHINGTON. (State.)

TACOMA.—W. E. Burkhart.

THE INTERNATIONAL DENTAL JOURNAL.

This excellent periodical has not always sailed on prosperous seas. One would think that the members of a profession would readily and heartily sustain at least one journal entirely disconnected from any mercantile interests, but this has not been the case, and the managers have been seriously considering the propriety of discontinuing it. This would be a misfortune to dentistry, for certainly every phase of professional interests should be represented, and this has been the only journal published exclusively by dentists. We are glad to know that the Lippincott Publishing Company will assume the responsibility for the ensuing year, so that its monthly visits will not be lost.

Theoretically, a journal published by dentists should be more untrammeled than one that represents manufacturing and mercantile interests, but practically there does not seem to be much difference. The majority of dentists are so devoid of professional pride, they are so selfish and disinclined to give the material assistance necessary to the life of a journal, that it must be largely dependent upon the advertisements of the mercantile and manufacturing interests for its support, and that destroys its independence of them. The fault rests solely with the dentists themselves, and it is a shame that the self-sacrificing managers of the *International Dental Journal* have not been better sustained by the profession at large, for they have furnished it with a journal that is first-class in every particular. Personally, the present writer has had a considerable number of years experience in the editing of both an independent and a dependent journal, and he is free to confess that he has not had more complete freedom to insert what he would in the one case than in the other.

ANOTHER JOURNAL.

The Dental Digest is a new aspirant for popular favor. It will be issued with the beginning of the new year, and it is to be edited by Dr. A. W. Harlan, the founder and former editor of the *Dental Review*. It will be published by Dr. J. N. Crouse, of Chicago, and will be the organ of the Dental Protective Association. We are not certain whether it is to be published by the Association, or by Dr. Crouse individually. The D. P. A. has been supported and assisted by all the other dental journals. Are we now to understand that it will run a rival to them? But by whomsoever it is published its appearance will be looked for with interest, for it will be certain to prove a live one. Dr. Harlan is an able and experienced writer, while Dr. Crouse is full of expedients and enthusiasm. We welcome it to the field and wish it all success. The price is $2.00 per year, and subscriptions may be sent to Dr. Crouse, at Chicago.

STOMATOLOGICAL.

A new association of dental practitioners has been formed in Philadelphia, to be called "The Academy of Stomatology." It numbers among its members some of the ablest representatives in that city. It has secured permanent quarters for its home, and promises a long career of usefulness and honor. It is most happily named, and we doubt not that its work will be as broad as the signification of its cognomen.

By the way, we believe that the first employment of the term stomatology, as applied to a society, was in Buffalo, nearly five years ago. The "Stomatological Club" was organized upon the basis of broad professional work, each question to be considered from a strictly scientific standpoint, and not from that of practical application. So Buffalo took the initiative in the use of the term stomatology in America.

ALUMINUM.

This metal has many qualities that would serve to make it the ideal one for dental purposes. It does not oxidize, it is light and strong, while in appearance it is less conspicuous than gold. There is practically no limit to the amount that can be produced, and it promises to become one of the cheapest of the metals of high grade. The disadvantages are the difficulty of ridding it of impurities, and its extreme reluctance to combine with other metals, so that soldering it has heretofore been almost an impossibility.

Dr. Carroll, of Meadville, Pa., has worked at it for many years with unwearied assiduity. He has overcome many of the difficulties met with in its manipulation, and when it shall have taken its place at the head of laboratory metals the credit will largely belong to him. He has invented a furnace that is simple and effective, with which it is possible to make beautiful and artistic work. The gum bases for artificial dentures are really unfit for use, as they are such poor conductors of heat that the tissues beneath them are kept in a very abnormal condition. The time is surely at hand when they will be superseded by metal, and it looks as if aluminum might prove to be that one. At the late Union Meeting held in Buffalo, some beautiful dentures made of that material were exhibited.

Dr. Carroll makes an amalgam alloy, in which aluminum is a principal ingredient, which those who have used it pronounce of a very superior quality. He claims to have overcome the difficulty met with in its reluctance to amalgamate, and it certainly makes a seemingly excellent filling material.

HOW IS THIS? — "Don't expect to have clean teeth or a sweet breath while there is a tinge of white upon the tongue," authoritatively declares a modern dental writer. Does the author of this piece of sapience mean to assert that a strip of white upon the tongue is an indication of a pathological condition? What then will he do with the fact that the evidence of healthy digestion is a white tinge upon the tongue? It should always be found during normal digestion, and it only disappears when that is completed.

NO APOLOGIES.—We are compelled to omit a part of the editorial that had been prepared for this number, that we might find room for the reports of the memorial meetings, which were of much greater moment. "Current News" is also less full than ordinarily, while the usual book notices are crowded out altogether. Even with these elisions it has been necessary to devote more than the usual number of pages to reading matter.

FIRST DISTRICT DENTAL SOCIETY.—The usual special mid-winter meeting of the First District Dental Society will be held in New York City, January 8th, 1895. A large number of clinicians will give demonstrations at the New York College of Dentistry during the day, and Dr. A. W. Harlan, of Chicago, will, in the evening, read a paper upon the use of coagulents in the treatment of pulp chambers and root canals.

DENTAL HISTOLOGY.—*The Dental Record* of London is publishing an excellent series of papers entitled "Dental Microscopy," by A. Hopewell Smith. They are illustrated by lithographic engravings drawn from original photographs.

COURTESIES RECEIVED.—The editor of this journal is under obligations to Dr. James McManus, of Hartford, and to Dr. M. H. Cryer, of Philadelphia, for assistance in procuring the data for the reports of the meetings held in those cities.

THE

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PREPARATION OF THE MOUTH FOR ARTIFICIAL DENTURES.

WHAT TO EXTRACT—WHAT TO LEAVE—MATERIALS—WHEN AND HOW TO USE—GETTING THE MODEL.

BY MORTIMER L. FAY, D. D. S.

Read at the Union Meeting of the Fifth, Sixth, Seventh and Eighth District Dental Societies, held in Buffalo, October 30 and 31, 1894.

That there is no branch of dentistry more important than the mechanical we all concede, and that there is none more neglected and perverted we must all acknowledge. Because mechanical work may be distasteful and disagreeable is no reason why it should be slighted, nor will it be by the conscientious dentist. Success can only be gained by combining skill with painstaking care, and perseverance; and if we are unwilling to give time and thought to this department, it is far better to leave it alone than to impose our carelessness upon our unsuspecting patients.

Mechanical dentistry is a broad subject and worthy our most serious consideration, but the brief time allotted will permit but the merest outline of some of the methods employed which have given me the best satisfaction in my work. The first requisite is a thorough examination of the mouth to ascertain its condition—whether any teeth remain, and if so their form, position, and condition; the shape of the arch, whether it is regular, irregular, high or flat; the condition of the membrane, state of the gums, material required for the impression, and the kind of appliance which can best be worn. Next, all tartar should be removed, carious teeth filled, diseased roots extracted, and the mouth put in a healthy condition. Regarding which teeth to extract and which to leave, each case must be a law unto itself. Suffice it to say, every tooth that can be used advantageously should be saved, since one natural tooth is worth a half dozen artificial ones for actual service.

The mouth is now ready for the impression, and to my mind the impression in the construction of an artificial denture is the most important part of the operation; for without a good impression, however much skill one may possess, good results cannot be gained.

There are four staple materials in use for taking impressions: plaster, beeswax, gutta-percha, and modeling compound. Now and then we find a dentist who uses but one substance for all kinds of impressions. This is wrong, for each has its place, and we cannot afford to discard any one of them. Plaster, modeling compound, and beeswax are the three most used, yet gutta-percha has its place and can be used with great advantage in some impressions of the lower jaw. Plaster is the material most commonly used of all. A full impression, either upper or lower, when the mouth is uniformly hard, can be best taken with this substance. The method of procedure is to select a tray, one-eighth to one-fourth of an inch larger than the arch; take a piece of sheet wax, about one-half inch wide, and build up the sides and ends of the cup, then warm the wax and place in the mouth. The wax being soft, it readily conforms to the sides and palate, thus giving, on removal, a properly formed cup. If it is a high arch, it may be built up in the center with wax instead of using so much plaster. The wax rim acts as a guide, as well as to keep the plaster within its proper limit; thus an impression may be made of the required height all around. The cup ready, mix the plaster, one part lukewarm water, with a small quantity of sulphate of potash previously dissolved in it, to two parts plaster, slowly adding the plaster to the water and allowing it to soak well before stirring; stir thoroughly and jar the bowl on the bench to remove the air-bubbles.

Fill the cup and insert in the mouth, putting the posterior end up first. If the arch be high, first put a little in the roof of the mouth with a spatula or the finger. The cup in position, raise the lip all around to allow the air to escape, and the plaster to go to place. Then gently press on the lip and cheek from the outside, and hold the cup in the center by the middle finger. Should the mouth be hypersensitive, use a forty per cent. solution of cocaine as a spray. Brandy and camphor water are also effective when used as a gargle. Have the patient tip the head a little forward and breathe through the nose. Do not remove until the plaster breaks in sharp and well-defined lines; care must also be taken not to keep it in too long, as the plaster absorbs the moisture from the membrane and causes it to stick. This, however, can be easily remedied by injecting a little water under the lip, or asking the patient to cough slightly. But the simple raising of the lip is generally sufficient. After removing, allow the impression to dry before varnishing.

Plaster for impressions should be kept in a dry and tight box, so that it will not absorb the moisture from the atmosphere, as this retards its setting qualities. Plaster for models may be fixed in the same proportions and way, only nothing is required to hasten the setting; but it should be allowed to stand over night before vulcanizing upon it. In pouring a model, put the plaster on the palatal portion of the impression and allow it to run down into the indentations, which will prevent inclusion of air-bubbles, especially in partial cases. When the impression is full, turn it on a piece of glass, and allow it to harden. When it is ready to separate, knock it out of the cup by tapping the handle gently. Cut it down from the back to the coloring matter, which will penetrate the plaster. Break off the outer rim and the center will drop out itself; trim the model at once as desired, and it is complete.

Should the mouth be hard in some places and soft in others, a material is needed which will compress the soft tissues, and thus allow the plate to ride uniformly on the soft and hard parts.

For this and all ordinary partial cases the modeling composition can be used to the best advantage.

Wax I seldom use, except in combination with plaster for some partial cases. The impression may first be taken in wax; then enlarge the imprints, and repeat with plaster; when hard remove, and treat the same as a full plaster impression, with this exception, that pins be placed in cavities to prevent fracture of the teeth in separating.

Modeling compound, if properly manipulated, will give most excellent results. The great trouble with four-fifths of those who use it is that they do not take time to prepare it properly, or expect to obtain good results from material which has been in use for years. Modeling compound deteriorates by use and age, and must not be used too long. Of the numerous compounds in the market, I prefer Ash & Sons'.

Having selected a cup with straight sides, about one-fourth of an inch larger than the arch, I soften the compound in boiling water, roll it into a ball, place in the center of the cup, and work it to the edge. If the arch be high, care must be taken to leave it high in the center and the surface free from wrinkles. Turn it over and dash some cold water on the back, then quickly pass the surface of the compound over the flames of the Bunsen burner. The water chills the back so as to give the compound a body, while the dry heat softens the surface, and a very sharp impression can be obtained with all the lines well defined. Place the cup in position, posterior end up first, raise the lip and press it up on the gums, and that which has run out the back also press in on the cheeks and lip from the outside. Allow it to remain until it fails to respond to the insertion of the finger-nail, remove and cool, allowing it to remain in water until you are ready to pour it. Place pins in the cavities the same as described before. If this method be followed out, it will be found that modeling compound is not the poor material some have branded it. If the compound be simply heaped up in a cup and shoved into place, as I have seen some do, you cannot expect the plate to fit, for the simple working of it in the hands cools the surface, and it would be impossible to get a sharp impression.

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SELECTING ARTIFICIAL TEETH.

PLAIN AND GUM—THE BITE—ARRANGING—GRINDING—WAXING UP.

BY H. B. MEADE, D. D. S.

Read at the Union Meeting of the Fifth, Sixth, Seventh and Eighth District Dental Societies, held in Buffalo, October 30 and 31, 1894.

The first step after the model is obtained is taking the bite. We will suppose we have a full lower set, or nearly so, of natural teeth. Place a sheet of warm wax over the model and press it down well, to make a trial plate. Now bend a piece of fairly stiff wire to fit slightly inside of the ridge, extending from heel to heel, secure it in position with a little hot wax, then press a roll of softened wax on the ridge, trim off the lower edge to the proper length for the teeth, and try in the mouth. If the lower teeth do not touch the ridge of wax evenly, trim off or add more wax, as the case may require, until the contact is uniform throughout. Then trim the labial surface of the wax until the contour of the face is brought out (having the lips closed) as well as may be. Now cool the trial plate, and lay a sheet of warm wax on the articulating surface of the ridge, trim off to the width of the ridge, and insert in the mouth. To have the patient close the mouth naturally is often a very difficult matter. I find it a good way to stand in front of the patient, using the forefinger of each hand to hold the trial plate in position, and direct the patient to close the mouth, having the finger back in the region of the molar teeth. As they close they will naturally bite the fingers, which will invariably prevent them from protruding the lower jaw; then gradually let the fingers slide out toward the cheek until the lower teeth meet the wax; then repeat the closing. If the lower teeth come in the same position the second time, we can feel satisfied that we have the proper relation of one jaw to the other. Then have the patient bite through the sheet of warm wax, mark the median line and the length of lips, and then remove. Take an impression of the lower teeth, either in wax or modeling compound, from which to make a plaster model, which will fit in the slight impressions of the teeth made in the bite taken, and then place the whole on any good articulator, which can be set to maintain the relative positions.

Now we are ready for the selection of the teeth. The amount of time it would require to give this proper consideration will not permit me to go into the details. Suffice it to give a few hints on the subject. In no department of dentistry is more skill, judgment, and artistic ability needed than in the selection and arrangement of teeth. The late Dr. Allport once said: "He who has but moderate ideas of symmetry, harmony of expression and color, is constantly pained by the lack of that artistic selection and arrangement of teeth which serve to restore to the face the shape and expression left on it by the Creator, the absence of which stamps him who should be an artist an artisan, as a mechanic a deformer of the human face divine." In selecting teeth, we have to consider their shape, size, color, and character. The dentist may be guided by the natural teeth remaining, but should there be none, then we must study the physiognomy as well as the temperament of the patient. I am a strong advocate of plain teeth, and believe that in the majority of cases they can be used to better advantage. The excuse the dentist who uses gum sections generally makes is that the patients will not have anything else, but were he to be converted from his sinful ways, and use plain teeth, then we would probably hear him say, "My patients will not have anything else." I believe that nine-tenths of the failures are caused by the indiscriminate use of gum sections. I call them failures, because their appearance in the majority of cases is an outrage to the face. Although the mechanical arrangements may be entirely satisfactory to the patient, the artistic arrangement, as well as the contour of the face, has not been fully developed, and should the mechanic undertake an artistic arrangement his efforts would be largely aborted by the unnatural stiffness of the gum sections.

To obtain the highest success in artificial dentures, in addition to its utility it must restore the contour of the face and lips formerly supplied by the teeth and alveolar process. It must also be in harmony with the general appearance, physiognomy, and temperament of the wearer. In order to fully comprehend these relations, it is necessary to study the general form of the face, both in profile and in full view.

There are only a few general directions that may be given in the arrangement of teeth; no definite rule can be laid down, as each case varies as do individuals, the art of restoring expression being acquired only by observation and experience. The six anterior teeth should be arranged to form, or nearly so, the arc of a circle, while the bicuspids are placed somewhat outside of this line, followed by the first molar in a position which would be described by a straight line drawn from its buccal surface, touching buccal surfaces of the bicuspids and extending to the cuspids. The ten anterior teeth should be arranged so that when placed on a flat surface they will have uniform contact, with perhaps the laterals excepted. The molars should be shorter, and on an oblique line toward the condyles. Slight irregularities are sometimes artistically helpful, and in some cases irregularities to a marked degree add much to the natural appearance; but here, too, judgment is required, as well as the study of the physiognomy and the general build of the patient. For a lady with regular features well developed, irregularities, except slight ones, are to be avoided. For a patient who is tall and slender, with a narrow face, the underlapping of the laterals, and slightly shorter, may be in perfect harmony with the general development, while on the other hand a short, stout-built person would require the laterals fully as long as the centrals, and an overlapping may not be objectionable. In all cases the necks of the laterals should be *in* more than the centrals, and the necks of cuspids more *prominent* than any of the anterior teeth. If the bicuspids should be too large for the lower teeth, so that they do not occlude properly, grinding on the approximate surfaces will overcome the difficulty, and this should be done that we may obtain the best results in masticating.

In waxing up the case, it should be remembered that in the vulcanized plate we have an exact reproduction of the waxed-up piece; hence, wax up the case exactly as you want the piece when completed. To smooth the wax, coat the surface with oil, and a few puffs with the mouth blowpipe will render the surface perfectly smooth and uniform, the oil seeming to facilitate the flowing of the wax. Any adherent particles of wax may be readily removed from the surface of the teeth with a pledget of cotton dipped in chloroform. The case now is ready to be invested.

FLASKING, VULCANIZING, AND FINISHING RUBBER PLATES.

BY GEORGE B. SNOW, D. D. S.

Read at the Union Meeting of the Fifth, Sixth, Seventh and Eighth District Dental Societies, held in Buffalo, October 30 and 31, 1894.

Before flasking the plate, which is now secured to the model and "waxed up," as it is termed, attention must be paid to its peculiarities, as different plates will require different treatment. It may have either plain, or gum teeth, or both. The teeth may be set close to the model, and be intended to bear closely against the gum, or they may be at a distance, the rubber extending under them, and making the fit. The alveolar ridge may be thin and projecting, or low and of easy draft. We may have a facing of pink rubber, with either red or black rubber behind it. The manner in which the model and plate are to be placed in the flask will be modified according to these circumstances.

If the teeth are set close to the model, the latter is made thin, and set low in the flask, or possibly a deep bottom flask is employed. The plaster is built up against the teeth to their cutting edges or grinding surfaces, and the teeth thus retained in contact with the model, and the intrusion of the rubber prevented as far as possible. If the rubber passes under the teeth, forming a band above the artificial gums, when gum teeth are used, the position of the model in the flask will depend upon the shape of the alveolar ridge. If it be thin and projecting, and especially if the gums of the section teeth are set close, and hook over it, the front of the model must be raised, so that the projecting portion will be parallel, or nearly so, with the guide-pins of the flask ; otherwise there may be a breakage when the flask is opened. For such cases, the parallel sided guide-pins of the ordinary flask are rather objectionable ; and they can be improved by filing away a corner on each pin, nearly, but not quite, to the face, so that the two halves of the flask may move diagonally, and thus follow the lines of the model in these difficult cases. The plaster outside the teeth must, when gum teeth are used, the rubber passing under them, be kept low enough to make the parting line pass along the rim above the gums. Or if plain teeth are used with pink rubber facing, the parting should be at the very edge of the rim, so that any escaping rubber can pass into the gateway without dislodging the pink. The appearance of a streak of black or red rubber in the middle of the pink facing is not likely to induce perfect composure of mind, and it is always best to make the parting joint where it will be the least likely to allow of it.

If it is desired to save the model after vulcanizing, provision must now be made for its being easily got out of the flask. The exposed edges below the plate are cut away, and the model is then treated with soap. A little rapping will then bring plate and model out of the investment.

In case of full sets, mounted with section teeth, this is a good time to do something toward counteracting the effects of contraction. I would recommend, for this purpose, a jack-screw, its points to be imbedded in drops of wax, placed closely under the second molars, or as far back on the plate as possible. If the jack-screw is then wrapped in tin foil, the plaster will be kept from it, and it will come out of the flask in good condition.

The operator having a clear idea of the exact position the plate and model are to occupy in the flask, the lower section of the latter is now partially filled with plaster. The exposed part of the model is set into water for a few seconds, long enough for its surface to take up enough to prevent its abstracting too much from the fluid plaster, and it is then quickly carried to its position in the flask, and held there for a few moments until the plaster has solidified sufficiently to retain it. There is a point to be observed here as to the wetting of the model. If it is not wet, it may take up the water from the investment so quickly that it cannot be carried low enough in the flask. If it is thoroughly soaked, it will not abstract any water from the investment, and it may become necessary to hold it for a long time before the latter will acquire consistence enough to retain it in position. When it is so retained, the filling of the lower section of the flask is completed, the plaster being built up against the teeth, if this is required, and otherwise suitably disposed to form a parting. When hard, it is cut away with a knife to smooth and correct the surface. To prevent its sticking to the other half of the mould about to be made, it may be varnished and oiled, or covered with a strong lather of soap, to be rinsed off. Either way accomplishes the purpose.

The ring section of the flask is now put on, care being taken to see that it fits accurately, and it is filled with plaster. This should be mixed thin enough to pour readily, and poured into one place; the plaster being allowed to run around as the flask fills to expel the air before it. It may be assisted by jarring the flask. When full, the cover is put on, and the flask is allowed to remain until the plaster is thoroughly set. Sulphate of potash is often added to the plaster to make it set more quickly; but I do not approve of the practice, as I do not believe the plaster is as hard with this addition as without. It may also be observed that there is little or nothing gained by using very little water in the plaster. Enough may be used so that the mixture will flow quite readily, and when set the mass will be as hard as though less water were used.

I believe in allowing plenty of time for the plaster to become thoroughly hardened before vulcanizing, and I believe that the darkening of the joint, when section teeth are used, is, in some instances, partially at least, owing to the undue hurry of the dentist to set the case into the vulcanizer.

The flask is now warmed sufficiently to soften, without melting the wax of the base-plates, and its halves separated. The base-plate is now carefully removed and saved, in order that the amount of rubber necessary to replace it may be ascertained. After its removal, the mould is washed with boiling hot water, to melt and remove any small fragments of wax which may have been overlooked.

Gateways are now cut for the reception of surplus rubber by removing the entire parting face, excepting a narrow margin surrounding the mould. This, I insist, should never be cut into, it being one of the vital points in doing good vulcanizing that the rubber in the mould must be absolutely imprisoned, having no opportunity for escape when the flask is fully closed. The removal of the surface, as described, is imperative, for if it is left, the escaping rubber will be squeezed into a thin sheet, which will resist and render impossible the perfect closure of the flask. I do not think of any circumstances under which I would leave any of the parting surface, except the narrow margin I mention, nor do I know of any in which I would cut passages through it, except when the flask is to be closed and rigidly held closed by bolts or clamps, either of which are an abomination.

To give the rubber a smoother surface, and to prevent the adhesion of the plaster to it, the surface of the mould, or at all events that of the model, is now either covered with tin foil, or treated with collodion or liquid silex. The former is cemented to the model with thick shellac varnish, and if afterward rubbed with soap, it is quite readily peeled from the rubber. Thin foil, such as is used for filling teeth, is used for this purpose, and if it should stick to the rubber it can be dissolved by immersing the unfinished plate in a bath of hydrochloric acid for a short time. The action is hastened by the addition of a small quantity of nitric acid.

Collodion is sold at the dental depots under the name of ethereal varnish, and at an extravagant price. Any photographer can furnish plain collodion, which will answer the purpose equally well, and for less money. This is painted on the surface of the plaster before packing the mould.

Liquid silex or soluble glass is quite largely used for coating the mould, and serves an excellent purpose, but it requires some precautions in its use to attain the best results. First, the surface of the plaster must be clean, so that it will freely absorb the silex when applied. If it has been oiled, or if wax has been melted into it, the silex will not be absorbed, and though it may be of some benefit, will not be fully successful. Secondly, the silex must be quite thin, and should be diluted by the free addition of boiling water. It is well to have a second vial into which a small quantity can be poured and diluted for use. It must be kept free from fragments of plaster or other dirt, as it is easily decomposed. Thirdly, it should not be applied until a very short time before the mould is to be packed and vulcanized. After a few hours the silex is decomposed by the action of the plaster upon it, and a part, at least, of its good effects will be lost.

That portion of the mould which is to form the lingual surface of the plate should be carefully examined before the application of any coating to it, and if there are any little humps or protuberances upon it, they should be carefully shaved off with a sharp knife. Each one of these will make a hollow in the lingual surface of the plate, and increase the amount of labor necessary to scrape and finish it.

If section teeth have been mounted upon the model, it now becomes necessary to protect the joints against the intrusion of the rubber. This may be done by working a little liquid silex into them with a very thin instrument, and following it with a little dry plaster. A thin mixture of oxy-chlorid or oxy-phosphate of zinc may also be used. In my own practice, I have been better satisfied with the results I have attained by the use of a few fibres of cotton wool than anything else I have used. The corner of the joints where the packing is to be inserted should be slightly chamfered when the teeth are set up, and the little V-shaped groove thus formed packed with a few fibres loosely twisted into a thread. The ends are secured by forcing them into the plaster above and below.

The next step is to pack the mould, and, though it is not absolutely necessary to do so,.I prefer, and think it advisable, first to ascertain the quantity of rubber necessary for the purpose. If the base-plate consists entirely of wax, and the plate is to be of ordinary red rubber, twice the weight of the base-plate in rubber will fill the mould. This rule will give rather too much black rubber, and scarcely enough light red or pink, as the specific gravities of different rubbers vary widely. The quantity can be ascertained by immersion, by putting the base-plate, moulded into a lump, into a narrow vessel partly filled with water, and, after noting the level of the water, withdrawing it, and passing in rubber until the level of the water is restored. The flask should now be warmed, and the rubber softened by putting it on a plate, over a vessel of hot water, and the mould carefully packed. Narrow strips of rubber are first packed around the pins, and the remainder added in as large pieces as may be convenient.

To allow of re-opening the flask after closing it, that it may be seen to be properly packed, a piece of muslin may be laid over the exposed surface of the rubber, or if it has been necessary to pack both sides of the mould, two pieces of muslin may be used, to prevent the annoyance of having the rubber stick to both sides of the single piece.

The flask is then to be heated, preferably by boiling it, and then closed, either in a clamp or with bolts. It is then re-opened, the muslin stripped off, and if it is found to be insufficiently filled, rubber may be added. Or, if too much has been used, the surplus, found in the gateways, should be removed.

The flask is now ready for the vulcanizer, but should be either put into a spring clamp, or the bolts should have springs upon them, if they are used for holding it together. The flask should be held under an elastic pressure, so that as the rubber in the mould expands by heat the flask will yield to the pressure thus exerted, and will be prepared to follow up the rubber as it shrinks in vulcanizing, and maintain a steady pressure upon it. If the mass of rubber in the mould is not too thick, it may, in this way, be held up to its position, so that it will, when done, be in close contact with the teeth and pins. If the mass is of an unusual thickness, say over an eighth of an inch average, some other provision should be made to prevent the escape of the rubber. When colored rubbers are used, this may be accomplished by placing the flask in the vulcanizer with the bolts slack, so that it is free to open, and vulcanizing a third or half of the time, thus hardening the rubber sufficiently to prevent its flowing easily. The vulcanizer is then allowed to cool, and the flask is removed, the spring pressure applied, and it is then replaced and vulcanized for the remainder of the time. Black rubber, or pure rubber and sulphur, is more difficult to deal with, and will not give satisfactory results under this treatment. When this is used for thick pieces, pieces of sheet metal, of the proper thickness, should be interposed between the parts of the flask to prevent its being fully closed, and it should be held rigidly in this condition during the first half of the time of vulcanizing. Then the props should be removed, and the flask allowed to close under spring pressure during the remainder of the time. I am not sure but there is an advantage in this case in slow heating, allowing an hour or more to be consumed in reaching the vulcanizing point.

Much more care and thought than is usually given to the vulcanizing process is necessary if the best possible results are desired, and the kind of plate which is made while the patient waits is far from being a creditable production.

Better results will be attained if a longer time than an hour is given to vulcanizing. A much better and tougher plate will be had if it is allowed to remain in the vulcanizer two hours instead of one, the temperature being proportionately lowered. It must be remembered that the 320 degrees of the mercury bath thermometer indicate about 340 degrees for the flask and its contents, and that it is utterly impossible to vulcanize rubber so as to be satisfactory for dental purposes at 320 degrees actual temperature in much less than two and a half hours. Very thick pieces, especially if of pure rubber and sulphur, will require even a lower heat and longer time than this to prevent them from becoming spongy in the center.

The plate, being vulcanized and removed from the flask, is ready for finishing. But it will be remembered that, supposing it to be a full set with section teeth, I advised the use of a jack-screw to be placed across it at the rear. If this is done, it will be found to be quite closely held when the plate is vulcanized, on account of the contraction of the rubber in cooling, and its action in conjunction with the arch of porcelain formed by the teeth, porcelain having but little expansion under the application of heat, while rubber exhibits the greatest amount of it of any solid body. The amount of change may be measured with a fair degree of accuracy by observing how far the screw can be turned before it becomes slack, and the contraction can be practically overcome by spreading the plate to the same amount by turning the screw, bedding the plate in something to prevent accidental warping, as, for instance, a flask full of powdered soapstone, and subjecting it to heat enough to soften it. This may not be much higher than 212 degrees. It is not necessary to bring it to or near the vulcanizing point, though the vulcanizer affords a convenient means of heating it.

The plate is then filed into the proper shape, and its surface scraped, sand-papered, and polished. I do not know that I can offer anything new about this part of the process, and will therefore leave it, as I fear I have already trespassed upon your time.

THE ETIOLOGY OF PUS FORMATION.

BY S. ESCHELMAN, M. D., D. D. S.

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In studying the subject of suppuration, the question naturally resolves itself into that of the production of pus, a liquid of a thick, creamy, opaque, yellow-white color, slightly viscid, having an alkaline reaction, and a specific gravity of 1030 to 1033, and composed, like the blood, of a liquid portion which it strongly resembles in its constituent elements, and like the blood, of a second part made up of corpuscular elements.

Investigated superficially, one would say that suppuration is the product of inflammation; but that cannot be correct, because inflammation may or may not lead to the production of pus.

If we study the phenomena of inflammation proper, it may at first thought strike you as strange when I say that as I understand the inflammatory phenomena, they are but the exalted, or rather perverted, phenomena of normal nutrition; that is to say, nature, in its ceaseless activity of growth and repair, calls forth the same phenomena as are noticed in inflammation. We have the same dilatation of the capillaries, the wandering out of the white corpuscles, an effusion of the *liquor sanguinis*, and the same destruction and regeneration of cell-life; and the seat of inflammation, like that of nutrition, has its greatest point of activity in the capillary blood-vessels. Thus after a full meal we get determination of blood to the stomach, with an increased flow of gastric juice.

In great mental activity we get dilatation of the capillaries of the brain, with increased cell activity and an increase of heat. Again, in physical exercise, when the muscles are called into energetic action, the heart's action is increased, the capillaries become dilated in the parts exercised, as can be observed superficially by the flushed condition of the face. There is also a rise of temperature, likewise great increase of cell-activity. Now while in nutrition we have the phenomena of inflammation manifest, they are not progressive, but are merely sufficient to supply the normal growth of the system, and replace the normal waste, which is necessary for the carrying on of the normal functions of the body.

Now let this physiological irritation become a pathological irritation, the function of the cell or collection of cells so as to form organs, which in the former were simply increased, in the latter become disturbed, and produce an altered or deranged condition, which may be considered as a progressive process, but which as yet is not necessarily increased so as to cause inflammation, but which may be sufficient to lead to hyperplasia or tumor formation. Thus repeated irritation from friction or slight injury causes a thickening of the epithelium on the hands of the laborer. Corns are similarly produced.

Again, if the irritation be more pronounced, as in traumatic injury, the regenerative processes necessary to repair the injury will develop the first stages of an inflammation; but if kept in an aseptic condition will show no tendency to spread beyond the part first injured, nor will it pass on to a more advanced stage after the cause of the injury has ceased to act.

Everybody knows how slight are the inflammatory changes produced by severe fractures and sub-cutaneous injuries, if secondary causes are excluded. Huter injected a five per-cent. solution of nitrate of silver, or chloride of zinc, into the muscles and tissues of animals, quite killing the part acted on, and found that a large number of the cases experimented upon showed no signs of the inflammatory condition extending beyond its first stage.

Since an injury in itself is not sufficient to disturb the phenomena of nutrition so as to develop and carry the inflammatory process beyond its regenerative stage, progressively through the suppurative stages to the production of pus, there must be some direct irritating cause which, when directly introduced into the tissues, multiplies, and is destructive to cell life, which by its continuous action is capable of exciting the inflammatory action and developing it to the production of pus.

This cause we have in the Pathogenic Bacteria:

"It is a well-known clinical fact that the highest type of tissue vitality is unfavorable to the development or the retention of bacteria in the system for a long period of time. While it has been definitely ascertained by experimental researches that many of the pathogenic bacteria are harmless as long as they remain in the circulating blood, and that their specific pathogenic activity only becomes evident after localization has taken place in some part of the body, in a soil prepared by injury or disease for their production, it has also been conclusively shown by clinical experience that pathogenic spores may remain in the healthy body in a dormant condition for an indefinite period of time, until by some accidental pathological changes the tissues in which they may exist have been prepared for their germination."

Fodor introduced pathogenic bacteria directly into the circulation of rabbits, so as to observe their effects upon the healthy tissue and the way in which they are eliminated. Generally they had disappeared from the blood current after twenty-four hours. He believed the blood corpuscle destroyed the bacteria while circulating in the blood current.

Watson Cheyne's experiments led him to the conclusion that the living tissues, when in a healthy condition, are not favorable to the development and existence of bacteria.

The rapid disappearance of disease-producing bacteria from the blood, when injected into the circulation of healthy animals, goes to show that healthy serum has marked antiseptic properties; also that the blood corpuscles take an active part in their destruction. If some of the bacteria are not destroyed in the blood, but pass through the capillary blood vessels and come into direct contact with the fixed tissue cells, a struggle for supremacy again takes place between the bacteria and the fixed tissue cells. But if phagocytosis does not prove successful in destroying the bacteria which have entered into the system, nature still has a way in which to combat them successfully, viz., elimination through one or more of the excretory organs.

The critical discharge of the old writers—profuse sweating, diarrhœa and copious discharges of urine—receives a different meaning in the light of modern bacteriological researches, as they are now considered the way which nature takes to rid itself of the pathogenic bacteria and their products.

That bacteria are eliminated by the kidneys is shown by various observations, and as Cheyne points out, offers a reasonable solution for certain cases of pyeletis in patients who have never had any instruments passed, and whose urethras and bladders are normal. Philopowis produced tuberculosis in animals by injecting urine, taken from tubercular patients, into the peritoneal cavity. Schweiger, by his bacteriological researches, shows that the urine ot scarlatina patients is contagious.

Since we know that bacteria are the cause of disease, and that the system, when in perfect health, is capable of resisting the exciting causes, conditions must manifest themselves so as to predispose and prepare the system for the localization of pathogenic bacteria.

General depression of vitality has for ages been considered a predisposing cause of suppuration. Thus those conditions brought about by mental worry, starvation, overwork, exposure, and vitiated sanitary conditions, will so far lower the resisting power of the previously healthy tissues that they succumb much more readily to bacterial infection.

Local depression of vitality is another cause more easily recognized. If a part has been deprived of its proper supply of blood for a time, bacteria develop more readily in that part. Hueber found that after he restored the circulation of a part in which the blood supply had been cut off by ligation of the blood vessels, when he injected large numbers of septic bacteria into the blood vessels, they accumulated in great quantities in the part which had been deprived of circulation.

Injury is another predisposing cause of suppuration. First, by exciting the first stages of an inflammation; second, by causing an effusion of blood and allowing the pathogenic bacteria to escape from the circulation, so as to find a suitable soil for their development. The first stages of an inflammation are decidedly the most important conditions that produce local depression of vitality, so as to furnish a suitable *locus minoris resistential* for bacterial development. The first stages of an inflammation favor the suppurative process by bringing the tissue elements of the inflamed area in such a relation to the blood vessels as to impair or destroy their nutrient supply. In active inflammation the intercellular spaces soon become so crowded with lecuocytes and red blood corpuscles as to cause dilatation of these spaces, and pressure upon the capillary vessels, and often to result in stasis and an arrest of blood supply. As a result of such suspended nutrition, the leucocytes lose their power of resisting the action of the bacteria by undergoing coagulating necrosis. Again, it is safe to say that all conditions that impair cell nutrition, whether local or general, favor the suppurative process.

Suppuration in an inflamed area is always observed first where the cell nutrition is most impaired, hence in the center of the inflamed area, made up of leucocytes and embryonal cells, which is most remote from the vascular supply.

That pathogenic bacteria are the direct cause of suppurative inflammation and the production of pus, has been well established by clinical observations and experiments. Clinical surgery has, during the last two decades, shown that suppuration in wounds can be prevented when means are taken to destroy, remove or exclude the bacteria from the wounds. Rosenbach found that when a small quantity of pure cultures of staphylococcus pyogenes aureus was injected under the skin of rabbits and dogs, it produced a violent suppurative inflammation. Staphylococcus pyogenes albus had the same effect. Knapp performed similar operations on both eyes of each of a series of rabbits, with antiseptic precautions. One eye was infected with pyogenic cocci, chiefly staphylococcus pyogenes aureus. All the aseptic eyes healed without suppuration; all the infected suppurated and were destroyed, except those in which the operation was superficial.

Again, Garré inoculated a small quantity of staphylococcus pyogenes aureus into the root of the nail of one of his fingers, and produced a subcutaneous suppuration.

From this he cultivated the staphylococcus pyogenes aureus; and finding that small masses did not succeed, he rubbed with some force a large mass of the third cultivation into the skin of his arm. Four days after a formidable carbuncle was found, with some scattered boils; and it was not till after many weeks that the eruption healed, leaving behind it seventeen scars. From the pus obtained from the boils a pure culture of the staphylococcus pyogenes aureus was obtained. Bockhart, by applying small quantities of the cultivated bacteria in a sterilized solution of salt to the skin of his arm, produced small boils and postules of impetigo. They developed even where the skin was quite intact. Examination of the skin showed that the cocci entered the ducts of the sebaceous and sweat glands and sheaths of the hair. Bumm, by injecting under the skin of himself and others, small quantities of the cultivated staphylococcus along with a salt solution, produced typical abcesses. Some of the abcesses were as large as a fist, and contained the staphylococcus in abundance.

It is proven conclusively that the pus-producing bacteria can be cultivated from the pus of every acute abscess, and that the injection of pure cultures in sufficient quantities is always followed by suppuration.

The effect of inoculation with pus-producing bacteria will depend on the quantity of bacteria introduced, and the general and local susceptibility of the subject.

Watson Cheyne's experiments led him to the conclusion that the number of bacteria introduced greatly modifies not only the intensity of the symptoms, but also the character of the disease. His experiments were made with cultures of Hauser's proteus vulgaris. He estimated that one-tenth cubic centimeter of undiluted cultures of this bacteria contained 225,000,000 bacteria; and when this quantity was injected into the muscular tissue of the rabbit, it produced speedy death. Doses of less than one five-hundredeth cubic centimeter he claims had no effect. Doses of less than one-twelfth to one one-hundred-and-twentieth cubic centimeter, which contained in the neighborhood of 18,000,000 bacteria, rarely ever caused a positive result. With the staphylococcus pyogenes aureus, Watson Cheyne found that it was necessary to inject something like 1,000,000,000 cocci into the muscles of rabbits in order to produce a rapidly fatal result, while it required 250,000,000 to produce a small abscess.

In the study of the growth and reproduction of cell life we find that it receives and assimilates food. When certain substances, which serve as food, are received into the cell, they are in a large measure dissolved and become part of the body of the cell; and with their reception and assimilation there is at the same time going on an ejection or excretion of elaborated material. In other words, the protoplasm is continually undergoing chemical changes, room being made for the new protoplasm by the breaking up of the old into products which are excreted. These products have in all probability subsidiary uses in dissolving and preparing the food that comes within reach of the cell for its reception. .

With the growth and multiplication of bacteria there is this same functional activity of cell life taking place. The same reception and assimilation of food, and the same excretion of elaborated waste products, which by modern bacteriologists have been called ptomaines. These are alkaloidal bases closely resembling vegetable alkaloids, and in one or two instances were found to be identical with them.

It would be a very interesting scientific fact to know just how pathogenic bacteria produce their peptonizing action on the albumenoid elements of the tissues, so as to produce pus. Whether the death of the tissues is due to their assimilative action, in which they split up the albumenoid and other elements so as to form new compounds; or is due to their excreted products, the ptomaines, which destroy and liquefy the tissues so as to allow of their growth and reproduction; or whether the action is a two-fold one, the ptomaines killing the tissues, and the assimilative action splitting up the tissue elements into new compounds. Grawitz and De Bery, from their experiments with the ptomaines of pathogenic bacteria, believed that, like chemical irritants, they prepare the tissues for the growth and reproduction of pus-producing bacteria. The action of these ptomaines was studied by injecting sterilized cultures of pus-producing bacteria in which the active agent could only be the preformed ptomaines. These experimenters injected four cubic centimeters of a sterilized culture of staphylococcus pyogenes aureus under the skin of a dog, with the result of producing suppuration. Examination of the pus thus produced showed no bacteria. Grawitz also experimented with a pure preparation of cadavarin, a two-per-cent. solution of which killed the staphylococcus pyogenes aureus in an hour, and a small quantity added to a culture of pathogenic bacteria arrested their further growth. A solution perfectly free from bacteria, when injected under the skin of animals, produced cauterization or inflammation, according to the quantity or strength of the solution, which terminated in suppuration, inflammation or œdema, followed by resolution and absorption. The pus thus produced by cadavarin contained no bacteria.

Schenerlen was the first to study the local effects of ptomaines on the tissues. He introduced into sub-cutaneous connective tissue of rabbits, aseptic glass capsules containing a sterilized infusion of meat. The wound healed by primary union. As soon as the capsule became encysted he broke both ends of the capsule, so as to allow its contents to saturate the surrounding tissues. From three to six weeks after the implanting of the capsule an incision was made down to it, and a thorough examination of the tissues was instituted. In the ends of the capsule were always found a few drops of thin, yellow liquid which, under the microscope, showed all the characteristics of pus. The surrounding tissues showed no signs of inflammation. Inoculation of culture media with the fluid developed no bacteria. In about twenty experiments the pus was always found inside the capsule. Again, Klemperer made thirty cultures of the staphylococcus pyogenes aureus, and the same number of the staphylococcus pyogenes albus, and after completion of their growth, fourteen days after, he sterilized them with boiling water, and after shaking the fluid, removed the cultures and boiled them for a few minutes, and finally filtered them, thus obtaining 15 cubic centimeters of a light yellow fluid, which was further reduced by boiling to 8 cubic centimeters, and again filtered before using. The material thus obtained was put into glass capsules and the ends hermetically sealed. They were then, under strict antiseptic precautions, inserted into the sub-cutaneous connective tissue of animals. The suppuration following the breaking of the ends of the capsules, in these cases, were again found to be limited to the space within the capsules, being caused by the action of the preformed ptomaines on the leucocytes and fixed cells, which found their way into the interior of the capsules.

These experiments go to prove that the ptomaines of pathogenic bacteria exert a chemical action on the leucocytes and embryonal cells, by which they are converted into pus corpuscles. The suppuration produced by these experiments never extended beyond the tissues which were brought in contact with the ptomaines; it always remained circumscribed, and did not show the progressive character noted in clinical suppuration.

There are a number of investigators who claim that suppuration can be produced artificially in animals, by injecting into their tissues certain chemical agents, such as metallic mercury, turpentine and croton oil. Councilman introduced in aseptic glass capsules, turpentine and croton oil, into the sub-cutaneous connective tissue of animals, with antiseptic precautions; and after the capsule had become encysted and the wound healed, the capsules were broken, and he found that both substances produced a circumscribed suppuration. Uskoff claimed that a number of indifferent substances, such as milk and olive oil, if injected sub-cutaneously, produce suppuration; but Orthmann, by using more strict antiseptic precautions, could not verify Uskoff's experiments. Grawitz, from his experiments with aseptic turpentine, believed that if used in sufficient quantities it always produced suppuration. He also found by inoculating different nutrient media, that such pus contained no pus microbes; also, that such chemical pus was destructive to them. On the other hand, such men as Schenerlen, Rings, Strauss and Klemperer, from their experiments, after having used extreme antiseptic precautions, have come to diametrically opposite conclusions, viz., that under no condition does simple chemical irritation give rise to the formation of pus. Cheyne, in summing up the evidence pro and con, concludes that the difference of opinion is due to the fact that the pus-like mass of slowly dissolving dead cells and fibrin, which some observers have called pus, is not considered as such by others; and he agrees that true, creamy pus is never found in man, apart from bacteria. When we reflect for a moment how difficult it is in experimenting upon animals with chemical compounds, and to procure for the seat of the injection a perfectly aseptic condition, it will not be difficult to understand that opinions still differ in reference to the direct and essential cause of suppuration.

If we grant that some chemical agents are capable of producing pus, it is not true or clinical pus, and it contains no bacteria, is aseptic and sterile. Its cause cannot be developed like true pus upon different culture media, and when again introduced into the tissues develops suppuration. It is only obtained in the experimenter's laboratory at the cost of extreme care. We may conclude, then:

First. That suppuration is a progressive process which starts from the phenomena of nutrition and passes through all the stages of inflammation to the death of the cellular elements and liquefaction of the inflammatory products, so as to produce pus.

Second. That simple traumatic or phanerogenetic inflammation is in itself incapable of passing on to the more advanced stage of suppuration.

Third. That pathogenic bacteria are the essential and direct cause of suppuration, and that by their growth, development and formed ptomaines they are capable of initiating the inflammatory phenomena, and developing them successively through all the stages to the production of pus.

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PARTIAL ARTIFICIAL DENTURES A MENACE TO THE NATURAL TEETH.

BY J. B. WILLMOTT, D. D. S., TORONTO, ONT.

Read at the Union Meeting of the Fifth, Sixth, Seventh and Eighth District Dental Societies. held in Buffalo, October 30 and 31, 1894.

It will, I presume, be universally conceded that the first duty of the dental practitioner is to conserve the natural organs. In a very considerable percentage of cases, however, a further duty devolves upon him of replacing these organs when their loss has become inevitable. A pretty wide range of observation, and considerable attention paid to the matter, has convinced me that whenever a partial denture is inserted in the mouth of a patient, a new and active factor has been added to those already existent, tending to the destruction of the remaining teeth.

There are but few practitioners, of even limited experience, who have not observed the marked tendency to the development of caries on approximal and lingual surfaces of teeth in contact with artificial dentures, a tendency which has become more marked since the advent and almost universal adoption of plastic bases, hard vulcanite and celluloid.

The cause of this widespread condition is worth investigating. When the teeth are in the normal relation to each other, even when close together, there is more or less of a free space between the point of contact of the teeth and the septum of the gum, which is filled with moisture. During the greater portion of the time the mouth is a closed cavity, and every motion of the tongue, cheeks and lips by pressure on the confined air causes a movement of this interstitial moisture, a movement which serves a very important purpose in exhibiting dental caries.

The accepted theory of dental caries assumes that the destruction of tooth-tissue is due to the action of the acid ptomaines of certain bacteria, the life-history of which constitutes the phenomena known as fermentation. The conditions favoring this particular form of fermentation are a lodgment of starchy or saccharine matter, the presence of moisture, heat, and an organized ferment, and perfect quiescence.

While the teeth are in normal relations to each other, quiescence of the interstitial moisture mixed with particles of food for long periods is impossible, so that the conditions most favorable to the development of fermentation are absent. The more free the dental interspaces the greater the movements of the fluids, and, as a consequence, the greater freedom from the conditions favorable to the development of fermentation, resulting in approximal surface caries.

All dentists have observed the comparative immunity from caries of teeth naturally well separated from each other. We have all noticed that the anterior lower teeth, when free from tartar, are much less liable to develop caries than other teeth in the mouth, a condition explainable from the fact that in normal conditions every movement of the tongue forces the saliva over their approximal surfaces, thus preventing the condition of stasis under which fermentation flourishes.

If this reasoning be correct—and we have no doubt on that score—then it follows that every departure from the normal condition and relations of the teeth in the mouth that interferes to any extent with the free movement of what may be termed the interdental moisture is a menace to the permanence of the natural teeth, and a very important factor in the development of approximal surface caries. The degree to which partial artificial dentures thus endanger the remaining teeth will depend, of course, very much on the skill and intelligence with which this operation is performed. How are partial dentures on plastic bases usually constructed? Take, for illustration, the insertion of two lateral incisors on what is termed a band or spring plate, a very common form. An accurate impression is taken of the remaining teeth and associate parts, and the vulcanite base-plate of the denture is constructed so as to cover from two-thirds to four-fifths of the palatal surfaces of the teeth as far back as the second molar. The denture fits beautifully into the interdental spaces; the artificial laterals completely fill the spaces and rest closely on the approximal surfaces of the cuspids and centrals, the base coming well up on the palatal surfaces of these teeth. The denture is put in position and pronounced a perfect fit. What have we accomplished besides replacing substitutes for two lost teeth? Simply this, that we have absolutely prevented any movement of the moisture in the interdental spaces so long as the denture is in position. In many cases these are removed but once in twenty-four hours, when the teeth are brushed on rising in the morning. As experiment has determined that starch and sugar lodged between the teeth are, by the processes previously referred to, converted into acids in a very few hours, we can well understand why, in a few months, the wearers of such dentures as I have described should be shocked to find that what they regarded as good cuspids, centrals, bicuspids, and molars had developed extensive caries. To the initiated there is no occasion for surprise. If this had been the result deliberately aimed at, no more certain means to that end could have been devised.

While the class of partial dentures used as an illustration is possibly the worst sinner, inasmuch as in proportion to the number of teeth inserted it closes more interspaces and covers more palatal surfaces than other forms, the frequency with which lost bicuspids are replaced on dentures which cover the palatal surfaces of all the other upper teeth, preventing all movement of the fluids in the interspaces of the incisors and cuspids, accounts for the development of vast numbers of approximal cavities in the anterior teeth.

Where crowns or bridges are inserted in such a manner as to impede or prevent the movement of the fluids over the approximal surfaces of adjoining teeth, similar results are produced. What is the remedy?

We admit, of course, that partial dentures must be inserted. The only question is, how can the danger to the remaining teeth be reduced to a minimum?

Probably the best course to pursue would be to abandon entirely the use of plastic bases for partial dentures and substitute thin metallic bases, which will not close the dental interspaces or cover the palatal surfaces, at the same time exercising care that the tooth or teeth do not so closely fill the space as to prevent free wash over the exposed surfaces of the natural teeth, and depending for retention upon skillful clasping or on suction. With many patients the increased expense will make this method impossible. Even with plastic bases the evil may be enormously lessened. Where bicuspids or molars are replaced, what is known as a cut-off plate is an immense improvement on the ordinary forms.

Instead of reaching forward and resting on the palatal surfaces of the anterior teeth, it is cut from the cuspid on either side so as to expose in the median line from three-eighths to five-eighths of an inch of the mucous covering of the palatal surface of the mouth. Posteriorly it is cut away from the remaining teeth so as to touch only a small portion of one tooth on either side of the space to be filled. It is extended across the palate and retained by suction. There are great advantages in this form in addition to the greater immunity from caries which it insures. At no point in the mouth is a denture so much in the way as immediately behind the anterior teeth. This form leaves this portion uncovered. The special sense of taste is located in the tongue, and this function is much more perfectly performed when the tip of the tongue can be brought into contact with the mucous membrane of the anterior part of the palate. This is permitted by this form of plate. In cases where, of necessity, the plate must pass across the palatal surface of some natural teeth, as where a molar, first bicuspid, and central incisor are to be inserted, the intervening natural teeth being in position, the edge of the plate should be chamfered down till quite thin, so that the smallest portion of the palatal surface will be covered and the interspace left free. The backing of the artificial teeth should be beveled away from the natural tooth so as to permit the free passage of fluids. In the insertion of Richmond crowns or Logan crowns care should be exercised that, especially at the central portion of the tooth, the artificial does not lie closely to the natural one.

One further suggestion in conclusion. If there is any truth in our contention, it is evident that the longer a partial denture remains in the mouth without removal the greater the danger of mischief. Our patients who are so unfortunate as to be obliged to wear these partial dentures should always be instructed as to the danger to the remaining teeth, and the conditions so explained that they can understand the necessity for the exercise of great care. They should be told that it is important that, several times during the day, the denture should be removed and the mouth rinsed in such a manner as to force the water over the approximal surfaces, washing out the interspaces, and especially should this be attended too immediately before retiring, so that the incipient fermentation of the particles of food remaining from the last meal may be broken up, and not be permitted, as it otherwise would, to go on to completion under the conditions of quiescence which exist during sleep. Under no circumstances should partial dentures be worn during the night.

DENTAL SOCIETIES.

BY S. E. MACDOUGALL, D. D. S.

Read before the Barrettonian Society of the Dental Department of the University of Buffalo.

For many years I have been of the opinion that dental societies have done and are doing a greater work for education, and are furnishing a greater incentive for the advancement of dental science, than we can fully comprehend. The dental child was fully born when the first dental society was organized. That child has grown through the fostering care of men who were seeking more light, and who realized the narrow bounds in which they were placed. From a condition of reserve and a reluctance to impart knowledge on the part of the dentist, has grown a sentiment just the reverse. If, now, one concieves a new practice or principle, there is a willingness or anxiety to impart it; and what more natural place for such a presentation than at a meeting of a dental society. If a new theory is advanced, other minds are brought to bear upon it; new light shows its defects or consistency, and the world at large thus receives the benefit.

A strong, useful society, or a great man, is not made in a day. Both come up through many trials and tribulations; little is added to little until the storehouse is full of knowledge, as an edifice is erected, brick upon brick. If man makes the dental society, it is no less true that the society makes the man. Each builds the other. Here his mistakes are made plain to him and rectified, his successes published for the benefit of others, and he is thereby encouraged to go on and make for himself a name befitting the noble profession he is endeavoring to adorn. The man who wins applause through one success, usually makes the resolution then and there to do greater things to help him up the hill he is climbing. Where would we stand to-day as dentists but for dental societies? But for them our dental literature would be published in connection with the barber's notice of his tonsorial art, our colleges remain in an embryonic state, and our offices be mere mechanical work-shops.

About all that we have attained as professional men, members of a truly noble profession, is due to the instrumentality of the dental society. Who are those most proficient in their profession, most active in advancing its scientific attainments, adding most to its literature, founding colleges and placing dentistry to-day where it is being recognized as a branch of the medical profession? They are those who do most to build up the dental society, and whom the dental societies have in turn developed. When the first societies were organized there was a desperate struggle for life, and some of the older dentists of Western New York, such as Doctors Southwick, Barrett, Palmer, Barnes, Nelles, and Priest, with others, will testify to the truth of that statement; but a few determined hearts and level heads can accomplish much.

This was the little nucleus from which great events were to transpire. Dentistry reached out its grasp to obtain possession of a name that should adorn the pages of history, and make man healthier and happier through its successes. We have reached a point in scientific attainment where our medical friends may receive our criticisms without feeling that the gulf between us is too wide for them to accept at our hands any suggestions, and they must admit that we have at least added a few points to their knowledge in medicine. It matters but little to us whether we are considered a branch of the medical profession or not, as that question will solve itself. Miller's hypothesis adds volumes to medical and dental science. His theory of caries of the teeth, which is now taught in some of the schools, is familiar to most of you, and I need only touch upon it lightly. It is that when food lodges between the teeth and comes in contact with the ptyaline of the saliva, the starches are converted into glucose. This fermentable sugar is a proper menstruum for the proliferation of micro-organisms, and they consume certain elements and leave certain others which form by-products, and one of these is lactic acid, which dissolves out the lime salts of the tooth. Miller claims to have discovered over a hundred different kinds of micro-organisms in the mouth, and says that he has only just entered the door of discoveries; of course these micro-organisms do not in all cases produce disease, as the conditions are not always favorable to their proliferation. But he has developed a micro-organism which produced a caries of the teeth out of the mouth, analoguos to that in the mouth. If he can do this, it seems that he proves the correctness of his theory.

Pyorrhœa Alveolaris is a fruitful subject for research and consideration in our dental societies, and men who have had equally good opportunities for studying disease and its cause take opposite views in regard to the matter. If the etiology of pyorrhœa is ever finally solved, it will probably be due to the stimulus which its investigation receives in society papers and discussion.

I have been greatly struck by comparison of the methods in which surgical operations are conducted now and only a few years ago. Now everything is sterilized and made aseptic, and the greatest care taken to prevent any possibility for the development of micro-organisms. It was not so a few years since. The instruments and all pertaining to the operation were not rendered aseptic, and the patient often died from the septic condition in which the wound was left after the operation.

Prof. Barrett, in his lectures at the University, lays special stress upon the importance of the sterilizing of dental instruments, and when he has a case of syphilitic character he compels the patient to buy a set of new instruments for the special operation he is about to perform, and never uses them on any one else. I think we would all do the wise thing to heed this lesson well.

Dr. Van Woert claims that pyorrhœa can be transmitted from one patient to another. If this is so, much harm might be laid at our dental door, unless we take proper precautions. Dr. Smith, a dentist, and also a practical chemist, connected with the University of Buffalo, uses the following method to sterilize his instruments.

"After wiping debris off the instruments, place them in a vessel containing peroxide of hydrogen, and allow them to remain until effervescence ceases, the peroxide removing all infections. Then place them in a ten-per-cent. solution of thymol, into which put a few drops of oil of cassia, to give it a pleasant odor. Thymol, according to Miller, of Berlin, is an excellent germicide, and its use makes the instruments thoroughly aseptic, deodorizes them and keeps them thoroughly clean. This method requires only a few moment's time, and the results are very satisfactory."

Prof. Barrett's teachings at the University of Buffalo on the so-called diseases of dentition, are in opposition to the practice and theory of a great many physicians. He makes a very strong case, and to my mind proves his point. I presume many of you have read his paper, "A Slaughter of the Innocents," read before the First District Society and published in a late number of the *Cosmos*. The article is too long for me to do it any sort of justice in a paper of this nature, but if there is any one who has not read it he would be well repaid for doing so, as a large proportion of children's diseases of the stomach and digestive tracts are charged to dentition, when in reality the most of them come from improper dieting.

If this is so, how essential for the physician to know the true cause, and the remedy is made more easy of application. If, through efforts of ours, physicians awaken to the importance of this subject, we may well feel a pardonable pride in the results.

While perhaps this paper has advanced no new thought, I am still not without the hope that it may stimulate some of us to more active efforts to discover the truth regarding scientific matters within our province. By your making this society what it ought to be, the society in turn will make you what you want to be—scientific men in reality as well as in name. The patience and interest you have shown in listening to this paper demonstrates the fact that you are interested in issues of vital importance to us all.

ALUMINUM AS A BASE FOR ARTIFICIAL DENTURES.

BY E. R. JOHNSON, D. D. S., BUFFALO, N. Y.

Aluminum has been used in dentistry for about twenty-five years, but, owing to its many peculiarities its employment has been circumscribed. Like amalgam it has had its ups and downs, and like amalgam it is here to stay. The many "downs" which it has received have caused the large majority of dentists to give it a wide berth, but the recent production of pure aluminum has done away with the old cavil that it disintegrates in the mouth, and a new trouble has appeared upon its horizon. It is urged that the metal is soft and very pliable after it is swaged. It is concerning this objection that I wish specially to speak. Improper annealing is the usual cause of soft, pliable plates, the usual method being to coat the metal with sweet oil, then to hold it in the flame of a Bunsen burner until the oil has burned off, when it is immediately plunged into cold water. This softens the metal, but leaves a surface tension which is objectionable at this stage of the manipulation, for it makes a re-annealing necessary before the swaging is finished. This again softens the metal, and as it has already taken on the shape of the intended plate, there is not enough swaging and manipulating to be done to temper it again, while if it is not annealed the metal becomes so rigid that perfect adaptation and the avoiding of wrinkles in the plate are almost impossible.

The surface tension is accounted for as follows: Before annealing the metal the crystals are all elongated by the rolling of it into sheets. When the metal is heated for the annealing, the crystals tend to assume their original molecular arrangement, but when the metal is plunged into the cold water the molecules become stretched in taking their normal position, so that the outer surface or the outer layer of the crystals has assumed this surface tension.

Another proof that the molecules change positions and shape, can be observed if one will try the metal in a gauge before and after annealing. If it is twenty-four before annealing, it will be found to be twenty-five afterwards. If one would avoid this surface tension, he should be more careful about annealing and swaging. After the metal has been coated with oil, and this burned off in the Bunsen flame, it should be allowed to cool down gradually. It will be found that it takes some time to do this sufficiently to permit handling, but if it be carefully attended to it will permit a perfect molecular arrangement, and it will be found that the metal is much softer than when annealed in the old way. It will also have increased in thickness from a twenty-five gauge to a very tight twenty-four.

In swaging the metal the palatal portion should be swaged first. This can most easily be done by banking the die with moulding sand up to the ridge, and simply making a counter die of the palatal portion. Swage from this, and then hammer the metal over the ridge into place as nearly as possible. It will be found that it works very easily, and that wrinkles are handled with the utmost ease. After it is well beaten to place, a new counter die is run, as in the ordinary way. Finish swaging from this. It will be found that the metal is very materially condensed between the die and the counter die. Another reason why the metal is found too soft, is that the vulcanizing is done at a point that is too high. A temperature of 350° will soften the metal. Where vulcanizing is done at 320°, the inside of the vulcanizer will be at least 340°, and should the vulcanizer run up a few degrees above 320°, as is often the case, the metal will come out soft. The vulcanizing should be done at 300°, for an hour and thirty minutes.

In conclusion, let me suggest that the metal be placed so that the former grain shall be transverse, or from heel to heel.

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A NEW METHOD FOR PREPARING A SHELL CROWN.

BY E. E. MILLS, UNDERGRADUATE.

Read before the Barrettonian Society of the Dental Department of the University of Buffalo.

This crown is intended for bicuspids and molars in which one or more of the cusps of the tooth to be crowned are intact. It is especially adapted for forming abutments for bridges, when it is not desired to sacrifice much of the tooth tissue.

The preparation of the tooth is practically the same as for any other crown, except that the whole of the top is not ground off to make a flat surface. The sides are ground enough to enable the operator to fit a wide band upon it, and enough of the occluding surface to allow space for a plate of gold of about 24 standard gauge. But to gain this space the cusps of the tooth are not ground off flat, but are reduced just as much in the sulci as upon the summits of the cusps, thus preserving the exact contour of the grinding surface, the tooth being reduced the same amount in length at all points.

To do this, the fissures are first cut out with a bur, after which the remaining coronal surfaces are ground off by the use of any stone that may be adapted to the work. The tooth is thus reduced as much as is required for the method, while the shape of the cusps is retained, and a considerable amount of tooth structure is saved. The patient is thus relieved of pain and annoyance, and this is a point to which the efforts of the profession are now specially directed.

After the tooth is thus prepared, the band is to be fitted. This is left as long as it is desired that the crown shall be when finished, instead of cutting it down to allow space for the swaged cusps. The next step is to contour the band at its articulating surface, that the natural appearance as to shape may be preserved. This is done by grinding or cutting the occluding edges down to the line of the prepared tooth itself, following the outline of the cusps and depressions, but leaving it to project above the tooth the thickness of the 24 gauge plate previously referred to, which space is subsequently to be filled with solder of a high grade.

The band being in position, the open occluding edge is stopped with a piece of softened modeling compound, which is pressed down upon the occluding surface of the tooth. After this has hardened, the band, with the modeling compound in position, is removed, and the whole is invested in sand and plaster, allowing the modeling compound to project. As soon as the investment has hardened sufficiently, the modeling compound is removed, leaving exposed a complete model of the coronal surface of the tooth.

A piece of thin platinum is now fitted inside the band, which covers the model of the crown of the tooth. Flux of a creamy consistency is then used, and by means of the blow-pipe fine solder is flowed all over this to the thickness necessary, which will be indicated by the projection of the band above the platinum. For the sake of economy this filling in of the top may be made almost entirely of scrap gold, merely using enough solder to unite the pieces into a solid mass. After the crown is thus filled, it may be at once put into cold water and cooled, when it should be again heated to a red heat and dropped into alcohol, which will leave a clean surface that will not be objectionable to the patient when it is tried in the mouth.

It should now be put in position, when, by the use of articulating paper and the proper stones mounted for the engine, it may readily be made to articulate perfectly, without cutting down the cusps of the occluding tooth, while it will have the exact length of the natural tooth, thereby avoiding the unsightly appearance of a crown that is either too short or too long.

All that now remains is to remove the crown, polish it up properly, and reset it with cement, or in any other method desired. There will now be a crown with no line of solder around the band. Sometimes this becomes tarnished when a swaged top is soldered to a shortened band, even though the solder may be of high grade. Aside from this advantage, the following points of superiority are claimed for the crown, in those cases to which it is adapted: First—Saving of tooth structure. Second—Saving of pain and annoyance to the patient, and labor for the operator. Third—Economy of time and material. Fourth—More perfect articulation, with a better reproduction of the natural tooth. This has been my experience in the making of a number of crowns in the Infirmary of the College, and it is confirmed by the Demonstrator in charge.

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DISINFECTANTS AND THEIR USES IN DENTISTRY.

BY J. J. MADDEN, UNDERGRADUATE.

Read before the Barrettonian Society of the Dental Department of the University of Buffalo.

To students who are preparing for the practice of dentistry, it is of the utmost importance to know when and where to use disinfectants. In the mouth, we have all the essentials of a perfect breeding place for micro-organisms — heat, moisture, and the proper menstruum. With neglect of the proper hygienic precautions, we have decay and all of its accompaniments — putrescent pulps, abscesses, aud putrefactive changes.

The professional dentist would not attempt the treatment of a single tooth in a mouth in this condition, but he sets about the task in a systematic manner, just as we are carried along during college life by having obstacles removed, until at last we are prepared to look back with pride on the method of teachings pursued by our instructors.

In its consideration, the subject is naturally divided into three parts:

First. The conditions that call for the use of these agents.

Second. The classification of the agents.

Third. The uses and dangers that may arise from an indiscriminate use of the agents.

It is known that under certain conditions organic matter undergoes a change by the action of micro-organisms, and it is broken up into simpler compounds. This change we call fermentation.

As this progresses there is also another analagous action set up, that of putrefaction, or a breaking up into end products. Of these are the gases CO_2, NH_3, SO_2, H_2S, with offensive odors and poisonous substances known as ptomaines.

This may be the condition when we are called upon, and it entails the necessity for the use of that class of remedial agents which forms the subject of this paper.

Classification—Disinfectants may be divided into two classes: First, Those that may have toxic properties if used in excess. Second, Those which are harmless. The range of these remedies is very wide, so I will endeavor to speak only of those which should be found in every operating case, and which we should employ in every-day use.

The first class will include chlorine and some of its compounds, as ClH_2O, Labarraque's solution of chlorinated lime, calcium hypochlorite, permanganate of potash, carbolic acid, iodine and compounds of mercury.

Chlorine is a greenish-yellow gas obtained by heating 1 MNO_2 with 4 HCL. In this form it is an irrespirable gas of a disagreeable odor, and is the best disinfectant the physician can use for disinfecting rooms, but it could not be used in this form in the mouth.

Labarraque's solution is made by decomposing a solution of chlorinated lime with one of $NaCo_3$. This is a pale liquid with an alkaline reaction. It is a valuable agent in putrescent conditions, and will destroy all foul odors. The preparation should be kept in glass-stoppered bottles and in a dark place, as it is affected by air and light.

Chlorinated water (ClH_2O) is prepared by dissolving the gas in water. It is a very unstable preparation and should be kept away from light and air, as it readily decomposes, forming solutions of HCl. It is valuable to correct any fetor of breath, and to apply to any ulceration of the mucous membrane.

Chloride of lime, or calcium hypochlorite, is well known as a whitish, gray powder, and is a very good preparation from which to obtain free chlorine gas. It is a powerful disinfectant, and is also much used as a bleaching agent. It may be used in solution in the mouth, or applied locally.

In the above compounds of chlorine it is the oxygen that is liberated, and its atoms in a nascent state remove the foul odors, it being the most powerful disinfectant that we have.

Potassium permanganate occurs in the form of purple crystals, very soluble in water. It is much used in testing for organic matter in water, as it gives up its oxygen readily. It is a very good disinfectant, being used in abscesses and fetid discharges. In the treatment of putrescent pulps it may be used in a solution of five grains to the ounce of water, or as a mouth wash, using one grain to the ounce.

With carbolic acid you are familiar, and know the physical and chemical properties of this important drug. It is not, therefore, necessary to enter into a description of it, but a few words of caution in its every-day use may not be out of place. It is not safe to place this, or any other agent of its class, in the hands of those who are unaware of the dangers which may be incurred from an overdose. It is soluble in twenty parts of water, and is freely soluble in glycerine. To use it as a disinfectant in the mouth to overcome fetor, it may be given in a one one-thousandth solution, flavored with some agreeable water. In the pulp canal it may be used in full strength. It is readily absorbed, and when taken too long or in too large doses internally, it may be recognized by the dark color which it imparts to the urine.

Iodine is a strong disinfectant, and is usually used in alcoholic solution, but it possesses irritant properties when applied in excess. Iodoform is prepared from iodine, and occurs in yellow-colored crystals of a disagreeable taste and odor. This drug, from a clinical standpoint, is highly spoken of by good authorities. It has been much used in treating putrescent pulps, and as a root filling combined with the proper material. A very effective preparation to leave in a pulp canal while treating, is a mixture of glycerine and iodoform.

Iodine and iodoform used in excess will produce symptoms known as iodism, which can be recognized by heavy pains in the region of the frontal sinus, coryza, sore throat and acne, which may become pustular. Cerebral symptoms may also appear.

Mercury, in the form of mecuric chloride or iodide, is a valuable agent, and is used to disinfect pulp canals in a one one-thousandth solution, but while it does the work satisfactorily, there are other remedies possessing equally powerful disinfecting properties, and which have not its toxic properties, but which are perfectly harmless.

The disinfectants of the second class, those which are comparatively harmless, include listerine, pyrozone, peroxide of hydrogen, electrozone, and the essential oils.

Listerine is a pleasant preparation, made by combining different oils with some of the alkalies. It may be used in full strength, or diluted, and has a cooling and refreshing taste. It is a pleasant remedy to prescribe after the removal of calculi from the teeth.

Pyrozone is obtained in three forms: a twenty-five-per-cent. solution, a five-per-cent. etheral solution, and a three-per-cent. medicinal solution. The three-per-cent. medicinal may be used internally or externally, and is much employed for injecting into pus pockets, and as a mouth wash. If there is any organic matter present around the teeth, it will unite with it, producing effervescence.

Peroxide of hydrogen is well known, but is difficult to keep, as it has a great tendency to give off its extra volume of oxygen. Its use with us, because of this tendency, has been greatly restricted.

In electrozone, I am confident we have a drug that will effectually aid us in overcoming many difficulties in the way of disinfection. This is an electrolytic product of sea salt, containing the different hypochlorites. It is a colorless liquid with a somewhat chlorine taste, and is more stable than any like preparation. Professor Barrett obtained a specimen of this agent, and, recognizing its valuable properties as a disinfecting agent, placed it at our disposal, and I am glad to say that in the infirmary of the college we have accomplished remarkable results with it. Lately a medicinal preparation of it, known as meditrina, has been prepared, and that seems to possess advantages over the crude electrozone.

The essential oils are well known to you as disinfectants. The principal ones are cassia, eucalyptol, cloves, carvacrol and cajeput. These are not miscible in water, so when introduced into the pulp canal they are not washed away by the saliva.

A combination of carbolic acid crystals one part, oil of cassia two parts, and oil of gaultheria three parts, makes a very useful remedy for the treatment of putrescent pulp canals, and for injecting into pus pockets in pyorrhœa alveolaris.

Each of the many disinfectants has its own peculiar properties, and a full knowledge of their therapeutic effects is necessary to their intelligent use. In one class of affection it may be desirable to use an irritant like carbolic acid, while in others a milder one like some of the essential oils, or listerine, or a pure disinfectant without medicinal action, like electrozone, may be desirable. There is no single one that will meet all the requirements of dental practice, and hence the principal ones in the different classes should find a place in our cases.

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CORRESPONDENCE.

Editor Dental Practitioner and Advertiser:—About a year ago you published a cut of a mallet used as early as 1832 for filling teeth, which, of course, must have antedated its first employment by Dr. Atkinson.

In looking over Litch's Dental Surgery, published in 1829, I find on page 410 the enclosed memoranda, which still further corroborates the fact that Dr. Atkinson was not the first to use the mallet.

"I will here mention a very objectionable mode of preparing the cavity for the plug, and also a most injurious manner of introducing or compacting the metal. It is by using a common drill, turned with a bow and string, to prepare the cavity and fit it for the plug, and then to introduce the metal and farther compact it by using a *hammer* and punch. The most pernicious consequences often follow this practice, in the cavity not being often perfectly cleared of the carious matter and of the inflamed and diseased part, which is absolutely necessary to the proper performance of the operation. In the next place, the heat and irritation arising from the use of the drill often excites an irritable and inflamed state of the bony substance of the tooth, if not of the nerve and lining membrane. The hammer and punch, when used to drive in the plug, cause great pain in the operation, and injure the tooth. I lately saw the first incisor tooth shown me by a lady residing in this city, which she had plugged some time since. The operation was conducted as I before mentioned, and in hammering in the plug the enamel of the tooth was split from the edge of the gum to the new lower cutting edge of the tooth. I could mention several more cases I have seen of the injury resulting from this practice, but I do not think it necessary, as I am persuaded that no judicious surgeon dentist will ever adopt this very objectionable mode of performing the operation."

Very truly yours,

K. C. Gibson.

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PREDISPOSING CAUSES OF DISEASE.

BY HENRY BURCHARD, M. D., D. D. S., PHILADELPHIA.

At the height of the enthusiasm engendered by the results of any set or series of investigations in pathology or therapeutics, professional men are apt to have their attention so absorbed in the novel feature introduced, that other elements relative to the same subject are obscured.

During the past score of years, the discoveries, assumptions and hypotheses of the pathologists have been largely in that field of mycology dealing with pathogenic organisms. Not a few pathologists have gone germ mad; have become microbimaniacs; as in the past many have been seized by other forms of frenzy; but generically, these medico-psychical disturbances are of one class.

The results of labors in the domain of bacteriology are of inestimable value; for the biology, including the physiological chemistry of micro-organisms, and the nature of their products, render clear many problems of pathology which were before vague or unknown.

We have all seen that this ætiologic phase of disease has monopolized the attention of most therapists; the main object being the destruction and removal of these bodies, one cause of disease. There is another side to pathologic process, one which may be termed, not inaptly, the second element of disease,—the soil.

Life itself is, and always has been, from the lowest to the highest types, a resistance and a persistence against inimical forces — the resistance primarily found in a chemical compound of organized structure, which is the seat of a distinctive type of molecular motion, against influences which tend to hamper this movement, or effect some change in anatomical structure or chemical composition. This is about as near a physical analysis of life as we can get. What it is essentially, who will ever tell? It may be as Dr. George M. Gould says, a god, the Biologos. Life persists so long as the resistance exceeds the force of attack. It lessens, in the ratio of the lessening resistance. It is, as far as can be told, purely a question of attack and resistance; the latter maintained, inimical forces expend themselves in vain.

We see the universality of the causes of disease, and see that several individuals may be subjected to an equal virulence or amount of cause of disease; and yet one or more may succumb, the others be unaffected. This demonstrates a marked difference in inherent resistance to disease, possessed by the latter.

What constitutes a fit soil for the development of micro-organisms, is known but in part; for instance, an open wound, a surface deprived of its epithelium, becomes a more ready victim to the germs of erysipelas, septicæmia, or the pyogenic organisms. With the latter, the every-day experience of dentists shows the most fitting soil for their development is a pocket containing dead nitrogenous material. Aside from these evident points or instances of minor resistance, what is the difference between individuals; what is the power in protoplasmic elements which preserves in one, and being absent permits the destruction of the other? This power, inherent in some, may be made in instances an acquired power in others.

Whatever it is in the cell, anatomical structure or chemical composition, which results in this acquired immunity, is for the present unknown. Vaccination, including under this head the securing immunity from disease by the use of attenuated virus for hydrophobia and anthrax, or the use of tuberculin, produces in the cells susceptible to the action of the organisms represented, a condition similar to or identical with that possessed by the cells inherently insusceptible.

This susceptibility of an individual, or certain of his cell units, to the influence of pathogenesis, varies, and varies widely, at one time the peculiar resistance lessening, at another becoming increased. The range of the resistance of tissues is great, so that those previously healthy may acquire the condition of those inherently weak.

The weakness due to any cause becomes a predisposing cause of disease. Anything, any force, which interferes with proper nutrition and performance of function, tends to form a predisposing cause, so that behind the debility of cellular vitality there lies the question of general metabolism.

The special region interesting us is that of the teeth and their alveoli, and occasionally contiguous parts. The first inquiry is, what are the predisposing causes of dental caries?

This matter as to details of form, position and congenital malformations, has been pretty fully and not too satisfactorily expounded. All other things equal, the predisposing causes of dental caries become a question of the resistance offered by enamel and dentine. That there are wide differences in the organization (or hardness) of teeth, anyone who cuts them can testify. This alone, the physical structure of the formed elements of a tooth, forms the basis of primary resistance. The higher the organization (the harder), the less predisposition there is to caries. In this, as in succeeding statements, it is taken for granted that the active causes of caries are present alike in all cases.

Any cause which would tend to metamorphose a tooth of hard structure into a soft one would form a predisposing cause; if ever such a thing occurs, it is not due to external causes.

There will be noticed in many teeth, or in the teeth of the same individual at different periods, a dissimilar type and mode of progress of caries. In one tooth a cavity is formed, and there may be what is apparently a spontaneous arrest of the carious process; it is not truly spontaneous, for sections through the dentine will demonstrate that the terminal cells of the pulp, the odontoblasts, have been stimulated into constructive activity by the irritation due to the progress of caries, and a higher organization of matrix results, and the channels of advance have been closed to micro-organisms by the formation of a barrier of new dentine. The vital element has conquered. Another tooth in the same mouth becomes carious at some other time, and the disease may progress so rapidly that the dentinal matrix is but partially destroyed, and sections show micro-organism occupying the tubuli far in advance of the walls of the cavity. Now, as the matrices were probably primarily alike in both—and we assume the exciting causes of caries to be present in like intensity in both—the inference is, that the difference must be found in a difference in the cellular elements, the prolongations of the odontoblasts. Apropos of this, note in sections of carious dentine how the direct tubuli are invaded out of all proportion to the transverse processes. The resistances and reactions which were present in the first instance were absent in the second. That is, the resistance of vitality in the protoplasm of the tooth has been lessened. Ergo, teeth resist caries not only as mineral matter resisting solution, but have an additional safeguard in the vitality of protoplasm. Other conditions being equal, their resistance depends upon the condition of the protoplasmic prolongations of the odontoblasts.

In forms of anæmia and debility, such as are due to pregnancy, lactation, typhoid conditions, etc., it is found that teeth become the subjects and ready victims of caries. In all of the cases I have examined, this has apparently not been due to any change in the matrix of the tooth; for, although in teeth in which the carious process had made deep inroads the dentine is extremely soft or leathery, when sound dentine is cut it appears as hard as ever it was.

The conditions of the parts about the teeth in these constitutional states, permits an increase in the propagation and formation of the active causes of caries.

The decay progresses so rapidly that disorganization of the matrix is incomplete, but beneath this I have found the teeth of normal density.

In the convalesence of typhoid fever, many teeth will be found to have numerous cavities of decay. The carious process is so rapid that pulp exposure and frequently its death ensue, the whole course being painless.

Pulps which have been capped, or it may be only protected, may be found to have died thus quietly. The writer has no personal knowledge of a change in the structure of the matrix of dentine which arises from intrinsic causes, and leads to a lessened resistance. It is possible there may be a retrograde metamorphosis, as described by Bödecker; certainly there are cases of dentine resorption.

The writer's inference is that in these cases caries progresses rapidly, because of a lessening of nature's great safeguard against disease, the resistance of vitality.

The resistance of the vitality of the odontoblasts is lessened by debilitating disease, and they form food for micro-organisms. The forces of attack exceed the resistance.

It is undoubtedly true, also, that in atonic conditions, in states of debility, there is an oral environment fit for the excessive development of lactic acid, and numerous organisms.

As the enamel once formed is a fixed fact, it not being maintained with the slightest degree of probability that there is a vital enamel degeneration, any change in it must be due to external decalcifying agents, which, owing to the general oral condition, are present in undue amount. The decalcification progressing rapidly, the specific causes of caries are admitted to a structure, which, through a general debility of vital processes is incapable of defense, and decay proceeds with great rapidity.

In tubercular patients, toward the close of the scene in pulmonary phthisis, the same process may be noted; a recession of the gum gives access to vital structures, and the ravages of caries are great, in many cases the enamel being scarcely affected. The parts represented in dental disease cover all the ultimate histological element of the periphery, and therefore suffer early from alterations of vital processes.

The writer has noted a curious infrequency of alveolar abscess following the quiet death of the pulp in these cases—that is, acute abscess.

A corollary from all this in the change is one of vital—perhaps not chemical—alteration, and that the vital parts need additional protection.

This is most effectively accomplished by preserving the integrity of the enamel, and of the gum attachments, so that in debilitating conditions the use of antiseptic washes and thorough oral hygiene is doubly demanded. In the mouths of such patients minute cavities and fissures are to be sought out and filled, and fillings having even slight imperfections are to be made perfect, either by repair or thorough replacement. It is imperative that an impenetrable barrier be made between dentine walls and the exterior. Fillings should be finished so that they have at all edges a surface common with that of the tooth.

Everyone has noticed the frequency with which caries attacks cavities containing imperfect fillings, during pregnancy and lactation.

It has been demonstrated that the gouty diathesis is a predisposing cause to pericemental degeneration. That debility must be a cause in this, as in other diseases, is certain. Necrosis precedes joint deposits in gout, and the descending scale leading to necrosis must have been gone over in the pericementum, or a part of it, before calculi are formed.

It is probable that the acid reaction in the necrotic area produces a chemical precipitation of the urates, so that while gout is clearly a predisposing cause, enough evidence has been secured to show that its products become also an exciting cause.

Exhaustive study of the intimate nature of the pathology of caries, as indeed of many other diseases, will no doubt prove to us in the near future that our views of dental pathology will undergo a revolution similar to that which is transpiring in the theories of general pathology, for in the purely scientific aspect of our field of study we are a tardy second to the general practitioner. The spirit of revolution is rife, and we are catching its reflection.

BACTERIOLOGY AND DENTAL DECAY.

BY R. H. HOFHEINZ, D. D. S.

Read at the Twenty-seventh Annual Meeting of the Seventh District Dental Society, held in Rochester, April 23 and 24, 1895.

Your committee requested me to recapitulate something that I had read at one of our city meetings. I then promised to increase both the quantity and quality of my essay, but, alas, time has not permitted it. I will therefore only be able to give a general recapitulation of what I said at the previous meeting.

The bacteria comprise a group of infinitesimal organic unicellular beings, physiologically resembling the fungi proper in many instances. They increase by fissation, or through the medium of spores. Many kinds of bacteria possess locomotive power, and were formerly classed among infusoria.

De Bary classifies the chief forms into:

1. Cocci: iso-diametric (elongated, single cells).

2. Rod forms: cylindrical, less frequently spindle-shaped cells, or short chains of the same.

3. Screw forms: rods twisted after pattern of a corkscrew.

I. To the first group (coccus forms) belong:

(*a*) Micrococci.

(*b*) Macrococci, remarkably large cocci.

(*c*) Diplococci, which arise during the fissation of cocci.

II. To the second (rod forms) belong:

(*a*) Bacilli, whose longitudinal axis is greater than the transverse.

(*b*) Clostridium, spindle-shaped cells.

(*c*) Leptothrix, thread-shape, chains of cells, and many others.

III. To the third group (screw forms) belong:

(*a*) Vibriones, undulating twists.

(*b*) Spirilla, rigid rods, screw like.

(*c*) Spirochætes (streptococci, chain staphplococci, grape aggregation).

According to Henke's analysis, the chemical composition of bacteria is:

Water, ...	84.81	per cent.
Albumen, ...	13.03	"
Fat, ...	1.20	"
Ashes, ...	0.64	"
Undetermined residue, ...	0.32	"

According to this, a large amount of water is required; therefore, a nutrient solution should be composed of albumen, carbohydrates and small quantities of salt. This is confirmed by the fact that such solutions form the best culture media. The juices and accumulations of the human mouth at all times present such a medium.

Temperature exerts a great influence upon the vegetation of bacteria. The temperature which permits of the most rapid increase varies, but ranges between 25°–40°C. (77°–104°F.). Above 40° the development diminishes, while below 30° they proliferate slowly.

Oxygen also exerts special influence upon the life of bacteria. Three kinds are known in this connection:

1. Where oxygen is indispensable, "aerobic."

2. Where they thrive better without or demand exclusion of air entirely, "anaerobic."

3. The third class thrives with or without.

Acids and alkalies retard the development, with few exceptions. A neutral medium is best adapted to them.

Regarding their action upon lifeless matter, they are divided into:

(*a*) Fermentation bacteria.
(*b*) Color-forming bacteria (green, red and yellow).
(*c*) Gas-forming bacteria.
(*d*) Putrefaction bacteria.

The great Dutch scientist, Leeuwenhoek, in 1683, first observed that small organisms existed in the human mouth. He detected the "spirillum sputigenum." Miller mentions six kinds of bacteria which are always present in the mouth—leptothrix innominata, bacillus buccalis, spirillum sputigenum, etc. The process of fermentation going on in the oral cavity offers no exception to the rule that all fermentative and putrefactive processes are conditioned by the presence of living buccal organisms.

The action of bacteria upon carbohydrates is the most essential factor to us, as the origin of decay depends upon it. The experiments of Miller have abundantly shown this. His test is easily performed: Take 200 C. C. of fresh saliva, and mix with two grains of starch, and allow the mixture to stand for eight hours at blood temperature. It is filtered and heated to 212° F. to stop fermentation. It is then found strongly acid.

The relative action of micro-organism in tooth decay interests us to-day more than all other things. All sorts of causes have been assigned for decay of teeth. The following ten are the most important:

1. Depraved juices accumulated in teeth (Hippocrates), 456 B. C.
2. Disturbances of nutrition (Galen, 131 A. D.)
3. Inflammation (Hunter, Bell, etc. Heitzman, Bödecker, Abbott).
4. Worms (especially prevalent in China.)
5. Putrefaction.
6. Chemical dissolution (Tomes, Magitot, and Wedl.)
7. Parasitic theory (Leber and Rottenstein, Milles and Underwood, Black, and last but not least, Miller).
8. Electrolytic decomposition.
9. Diverse causes.
10. Chemico-parasitic influence.

The two most prominent theories of the day are the "Inflammation theory," advanced by Heitzman, Bödecker, and Abbott, and the "Parasitic" theory, advanced by Miller, Black, and others. Bödecker in his work on "Anatomy and Pathology of the Teeth," has largely advanced towards Miller's theory. He says: "The modern views of caries are based upon bacteriological researches. Previous to 1882, before bacteriology became a systematized science, the origin of caries was thought to be a mere decalcification of enamel and dentine, but even at that time much valuable work was done." Abbot, in Bödecker's new book, has also considerably advanced towards Miller's views.

The purely chemical view of decay is out of the question at this date, as no such conditions can be produced by acid alone as the microscope reveals in carious sections. Acids certainly have a decalcifying effect on dental tissues. The identity of a destructive process in the tooth with decay itself can only be established by the microscope. The greatest argument for the parasitic theory, Miller has furnished by his experiments in artificial decay.

Magitot has made extensive observations in this direction. Miller asserts that artificial decay can be accomplished so perfectly that the most experienced microscopist cannot tell it from natural. Having seen a large number of his specimens, I can only humbly agree with him. His method of experimentation is very simple. He cuts up a number of perfectly sound teeth, but of different densities, into different sizes, and places them in a mixture of bread and saliva. This mixture he keeps for three months at a temperature of 37° C. After that time, he finds all the characteristics of natural decay. All phenomena of so-called white decay are present. If the mixture is allowed to stand until the reaction becomes alkaline, or if the pieces are exposed to the action of different articles of food, such as coffee, tea, tobacco, fruit, etc., all possible shades of color are produced, just as found in the mouth. The characteristics are the same microscopically as those of natural decay. The canaliculi are filled with bacterial masses, the thickening of Neuman's sheath and swelling of fibrils can be plainly seen. Discoloration seems more prevalent where nitrogenous substances are present.

Atkinson said that all cases of artificial decay could easily be discriminated from natural decay, by the fact that in artificial decay the micro-organisms followed the line of the tubules without shrinking into the consolidated intertubular substance. Miller has shown by hundreds of specimens that both in artificial and natural decay the micro-organisms in deeper parts of decaying tissue are confined to the tubules, whereas those nearer the surface gradually liquefy the basis substance, thus producing the caverns which you will see in many of the specimens.

I believe, therefore, that we have every reason to assume that dental decay is a chemico-parasitical process, consisting of two distinct stages:

First. Decalcification or softening of the tissue.

Second. Dissolution of the softened mass.

Having mentioned the process of fermentation in the mouth, I may add that the acid is chiefly derived from particles of amylaceous and saccharine substances which lodge in the retaining places. These undergo fermentation. The fermentation of carbohydrates produces chiefly lactic acid, and this is the chief destroyer of the tissue in its first stage.

The second cause of the caries, the dissolving of the softened tissue, is caused by bacteria. We know through our culture experiments that mouth bacteria dissolve albuminous substances, converting them into a soluble mass. We know that the basis substance of dentine consists of an albuminous substance. The explanation therefore seems easy, and is readily observable under the microscope.

Some time ago, some one said, "Bacteriology has not yet saved the first human tooth from the ravages of decay, nor has it in the future any bright ray of hope that it will accomplish all that the scientific dentist would have us believe." This reminds me of the saying of Ashley Cooper, that medicine is a science founded on conjecture and improved by murder.

We must not undervalue the achievements of the scientist in dentistry. The work of the bacteriologist will remain until the theory of decay, as understood at present, shall be overthrown, and give room for a new one. The different germicidal remedies introduced to the profession by the bacteriologist will forever remain monuments to the attainments of the present era of investigation.

HYDROPATHY AND CURE.

BY WM. W. BELCHER, D. D. S., SENECA FALLS, N. Y.

Read at the Twenty-seventh Annual Meeting of the Seventh District Dental Society, held in Rochester, April 22 and 23, 1895.

The subject of this paper—water—has formed from time immemorial, a considerable part of the world's surface. The ancients considered matter to be composed of four elements: earth, air, fire and water.

Thales, an early Greek philosopher, and one of the seven wise men, believed the original principle of all things was water, from which everything originated and into which it was again resolved.

Water has for many centuries been employed as a remedy in medical science, and, like all remedies of importance, has had its day; and with that exaggeration which is incident to everything new, the first promoters of the system gave it out as a panacea "for all the ills that flesh is heir to." Institutes, retreats, sanitariums and cures in abundance were instituted to promulgate its teachings; but to-day hydropathy, in the minds of most people, is placed in the same category with the "blue glass" craze.

Out of much evil, good may come, and hydropathy of to-day has its recognized place as a cure of and preventive to disease.

The history of hydropathy, from its beginning to its present position, is a refreshing illustration of the truth that medical science is human first, and scientific afterwards, and the history of nearly every remedy or practice of value has been the same.

There is a pleasing belief held in some superior circles of the profession, that all these vagaries of fashion in medical theory and practice are past, and came to an end at a date not fixed within a year or two. But somewhere or somehow, in a manner and at a time not quite defined, medical science then entered upon a career of unparalleled progress, advancing steadily onward. It may have been in a spiral line more than a straight one—like unto Holmes' poem of "the crooked footpath," where—

"No line or compass traced its plan:
With frequent bends to left or right,
In aimless wayward curves it ran,
But always kept the door in sight."

But, unlike the path of the poem, where—

"No rocks across the pathway lie,
No fallen trunk is o'er it thrown,"

the wayside of medical science is scattered with rocks and fallen trunks. Somehow, we are half aware of this, and that a review of them would expose a good many grinning skeletons, and we prefer to let the skeletons remain in their closets, with the door securely fastened. We are well aware of their presence from the references to medicine by contemporary satirists: Montaigue, Molière, Swift and Le Sage, and many more, both earlier and later.

Le Sage, in his "Gil Blas," ridicules hydropathy in the character of Dr. Sangrado. Gil Blas receives his degree as a physician in a manner so easy that the Delavan college and Buchannan's school seems quite slow and difficult. Says the learned "Dr." to Gil Blas, in the one lecture that constituted the course in the school of hydropathy, "know my friend, all that is required is to bleed thy patients and make them drink warm water. This is the secret of curing all the distempers incident to man. Yes! that wonderful secret which I reveal to thee, and which nature, inpenetrable to my brethren, hath not been able to hide from my researches, is contained in these two points—of plentiful bleeding and frequent draughts of water. I have nothing more to impart; thou knowest physic to the very bottom, and reaping the fruit of my long experience, art becoming in a twinkling as skillful as I."

The efficiency of water in the cure of numerous forms of disease has long been recognized. It was largely employed by Hippocrates, the father of medicine, more than 2,300 years ago, and along with a regulated diet and an implicit belief in the assistance of nature, appears to have formed the chief element in his medical armory.

Both Celsus and Galen, who flourished, the one about 50 B. C. and and the other in the second century, speak favorably in their writings of the use of water in the cure of disease.

To Vincent Priessnitz, a Silesian farmer, is due the credit of modern hydropathy. Although an uneducated man, he was endowed with remarkable sagacity and genius. He introduced many new methods, and insisted on the value of exercise, diet, fresh air and mental repose, and was remarkably successful.

Some one has said that it requires as much genius to apply as to originate; and to the Silesian farmer we are undoubtedly indebted for our modern hydropathy, which to-day is worthy of a place in the pharmacopœia of every practitioner, be he physician or dentist.

The use of water in the treatment of disease is generally divided into two great classes; viz., hot and cold. These are used internally and externally.

The external treatment is in the form of baths, which may be complete or partial. They may be employed to reduce or to elevate the system, as the case demands. We are, most of us, convinced that water employed internally, used as a beverage, is conducive to health. Hot water is much employed internally as a stimulant to the digestive organs. The early-morning glass of hot water stimulates the digestive system, and promotes the secretion of gastric juice. Warm water, administered internally in sufficient quantity, is used to promote vomiting.

Hot water has an invaluable place in dentistry. We are all familiar with the use of the hot foot bath in the treatment of inflammation. In combination with an efficient cathartic, it will oftimes abate a serious inflammation of the peri-dental membrane. In its local application, I have found hot water invaluable, and it is particularly applicable in the early stages of inflammation. After a tooth has reached the suppurative point the water may not be of much value, but at any period prior to this it is invaluable. The method I employ is to fill the ordinary rubber bulb syringe with water as hot as the patient can endure, throwing the stream directly around the troublesome tooth and those immediately adjoining. At each fresh application the temperature of the water may be increased, until it is almost unbearable. This may be continued for five, ten, or even fifteen minutes; oftimes, one or two quarts will be used. I would like to impress the fact that a little hot water is not sufficient to produce results; the application must be thorough and long continued. At first the patient will complain of an intense pain. The hot water only serves to increase the trouble. When you understand the effect of the local treatment, this is to be expected. The first effect of hot water is to open the capillaries and to increase the inflammation. Its secondary effect is to contract, driving the blood out of the weakened capillaries, to a point at which the tissue is capable of taking care of itself, and when the capillaries have had a chance to contract and free themselves from the extra supply of blood, they are able to maintain their normal condition.

A very happy use of hot water is in the treatment of those aggravated cases of overlaying flaps of gum, so common in the eruption of the third molar. Spray the surrounding parts with the hot water, plenty of it, and you will be surprised at its efficiency, even in the most aggravated cases, in which it is nearly impossible to open the mouth.

Water is a valuable assistant in forming a diagnosis. In a simple inflammation of the pulp and periosteum, hot water will relieve and cold will aggravate the pain. The opposite is true of an abscessed or a dead tooth; cold, for the moment, immediately relieves.

In using water as an aid to diagnosis, it is important to isolate the tooth suspected. This is easily accomplished on the lower jaw. In the upper, or where it is a matter of debate as to its position, upper or lower, it is oftimes quite difficult.

A very excellent method to employ on the upper jaw is to make a small cardboard trough, which is adjusted around the tooth, conducting the water into a vessel held in the hand. The rubber dam may also be adjusted and used for the same purpose, and when it is difficult to determine which of two teeth is affected, the rubber dam may be employed to isolate one tooth, while the hot or cold stream is directed upon the other.

The intelligent use of a few remedies is more to be desired than the empirical employment of many.

The most successful practitioner is not always the one who brings into requisition the most remedies, or the greatest number of instruments.

Hot water, in its proper place, employed with intelligence, has given me more personal satisfaction than any other remedy in the treatment of inflammation. To those who have not employed it, I commend its careful attention.

VULCANITE AND ITS TREATMENT.

BY CYRUS A. ALLEN, D. D. S., BUFFALO, N. Y.

Read at a regular meeting of the Second District Dental Society, March 10, 1895.

The physical changes which vulcanite undergoes during the process of its becoming a solid body, I think are little understood. At any rate, the remedy for many of the evils of unscientific treatment are too rarely employed.

To begin with, let us briefly consider the elementary character of this body. The gum, as it comes to the manufacturer, is a purely vegetable compound—a hydro-carbon, made up of H_{16}, C_7. Upon these proportions authorities differ, but not to the injury of our argument.

Sulphide of mercury, which renders the body of use in our art, is now added in the proportions of 1 to 2 of rubber. We now have a compound, which, when properly treated, produces a uniformly dense and sufficiently strong base for our purposes.

Some of our high attenuationist friends boldly declare red vulcanite plates to be the origin of all obscure physiological derangements, charging as they do that the coloring pigment is red oxide of mercury, which is highly irritating to mucous tissue. The absurdity of this charge is clearly manifest when it is stated as a matter of fact, that our coloring pigment is simply sulphide of mercury. This preparation possesses no toxic, or even disturbing physiological effects whatever, and may be brought into mucous contact with impunity.

Experimentation by thorough processes aided by the most delicate instruments, has demonstrated that the quantity of mercury which it is possible to evaporate from a vulcanite plate before actually destroying the body itself, is only infinitesimally small. It should be remembered that in order to have even this slight manifestation of its presence, a high degree of heat must be attained, a condition which could not be sanely looked for in the human mouth, not even in some of the red-flag temperments of Western New York.

In the process of vulcanization it is rapidly conceded that we first have fusion of the component parts of the body under treatment, which occurs at certain definite temperatures. What are these points of fusion?

Any work on chemistry will place you right on the melting point of the sulphur in the mercury compound—and that will be 237° F. As to the melting point of the hydro-carbon compound, (rubber), elaborate experiments by Dr. A. P. Southwick prove beyond the possibility of controversy that this will be at 248° F.

Now, with the component parts of our body all fused, we may naturally expect the commencement of that remarkable and little understood physical change in the compound which we term vulcanization. That this change does begin at once upon the fusion of the compound ingredients, and that vulcanization as we understand it may be fully completed without the addition of a single increment of heat, is easily demonstrated. All that could possibly be required in addition to the present conditions would be a continuation of the 248° to 250° F. over a longer period of time. If doubt as to the truth of this statement exists in the mind of any one present, let me suggest to him that he can easily obtain a "lazy man's proof" of it, by asking any manufacturer of rubber garments how he treats the articles as to temperature, time, etc.

If he regards you, by the honesty manifest in your face, as one who is only seeking scientific knowledge, he probably will tell you the truth. If he regards you by the honesty *absent* from your face, you will probably loom up as a possible competitor or spy on his business, and the case being different, you will be compelled to seek information elsewhere.

Continuing in my quotations of the authority mentioned, I confidently make the statement that the actual destruction of vulcanite begins at 300° F., and continues in proportion as the temperature is raised up to 600° F., where rubber will be entirely dissipated, the sulphur being affected in the same manner at 824° F.

Now, a word in regard to vulcanizers and their use. It should always be borne in mind that the degree of heat indicated by the mercury bath thermometer never registers a degree of heat corresponding to that of the inside of the vulcanizing pot where the case is being treated. The figures for this statement are as follows: If the stratum of atmosphere enclosed in the pot above the water line (when the cap is adjusted) is not expelled, upon a degree of heat sufficient to generate steam being reached, we can always confidently rely upon our thermometer registering from 15° to 18° F., according to the amount of water, below that actually existing within the chamber. Not only this, but we must always be prepared to take into account a considerable loss of registering power of the thermometer, through the influence of radiation of heat, the convection of air currents, temperature of room, etc., etc. To these influences you can always safely charge a loss of registering power of the thermometer of at least 15° F., and usually more, it often being 20° F.

If these figures can stand verification, and I declare that they will, what will be the result? Simply this: the man who does not expel the atmosphere from the pot really subjects his case to a temperature of at least 30° F. more than that indicated by the thermometer. If he does expel the atmosphere, he still has 15° F. more than that registered. From this point our deductions are easy. We have declared that the destruction of vulcanite begins at 300° F. As an illustration of this point, let us imagine a case being treated at the old-fashioned 320° F., without regarding these two influences. The result is easy. Instead of 320° F., we have at least 350° F. If the stratum of atmosphere is expelled, we still have 335° F., to which our poor case is being subjected. If these figures and those preceding them are correct, we find ourselves treating vulcanite anywhere from 50° F. down to 35° F. above where the destruction of the compound actually begins. We are now asked what will be the manifestations of this unscientific treatment of the most abused and least understood body in the dental world. Every child in the land associates with rubber the property of elasticity, and that to the degree of exceeding in this respect any other body known to him. Do the high temperature plates retain this characteristic? By no means; on the contrary, they have entirely lost it. Why? Because the extreme temperature to which they have been subjected has destroyed this natural inherent characteristic.

The early workers of vulcanite will tell you that to-day we cannot produce a plate which can be constricted at the heels, as they "used to do," and thereupon see it return to its former relations. The reason for this is obvious. The pioneers in vulcanite were instructed to vulcanize at a low temperature—say 280° F. Besides this, the machines placed upon the market at that date were so constructed that the heat was carried up and re-directed upon the pot, thereby losing but little by the convection of air currents and radiation. If this be true, we now have to account only for the loss of the registering power of the thermometer by virtue of the stratum of air left in the pot. We have stated this to be equal to 15 or 20° F. This reasoning will easily solve the true degree of heat to which the case was subjected, and at the same time demonstrate why that property of elasticity was not lost in the work of the vulcanite pioneers.

The next manifest injury to the base for our purposes will be in its extreme contraction. It should be borne in mind that vulcanite is affected by thermal changes more than any other solid body. Its rate of expansion in ordinary temperatures is somewhat over six times that of iron, about five times that of brass, and nearly four times that of zinc. This extraordinary expansion upon the application of heat will conversely manifest itself by contraction when the opposite thermal condition is applied. How and where will this extreme contraction be manifest in dental plates? If your case be of the stupidly-contrived "gum sections," it can express itself only at one point, at the "heels," with a consequent raising of the body from contact with the model at the posterior part most manifest, but really extending itself well anteriorily. How can this be demonstrated? There is but one way. Preserve your model after vulcanization and restore the plate to it, when the extreme degree of contraction will be only too manifest. The base will have no manner of contact at its posterior part with the model upon which it was vulcanized. This contraction in case of the use of gum sections with properly ground joints, must necessarily be at the rear, as the arch cannot be crushed. In the use of plain teeth, the contraction is diffused throughout the entire plate, and consequently does not appear so prominently at the point mentioned.

The question may be asked, "How can the model be preserved?" This is perfectly easy. As soon as the temperature is reduced to the proper point, open the flask, remove the denture from the model, and at once place the latter over a gentle heat for a time sufficient to expel all moisture.

Another result of excessive temperature in vulcanization, and the inevitable contraction in the molecular re-arrangement which will follow, may manifest itself in cracked sections or chipped joints.

Still another condition may present the case with one or more "spongy" points, usually to be expected at the thickest part of the body. The writer's deductions from the foregoing are, that all bodies of vulcanite treated at a temperature above 300° F. (actual) will show:

First. Destruction, increasing proportionately with temperature elevation, and loss of elasticity.

Second. Extreme contraction, resulting in the plate having no membranous contact across the posterior part.

Third. Broken or cracked sections, or slivered at joints.

Fourth. Sponginess of vulcanite at the thickest portions, which may be manifest over a considerable surface, or may appear only at certain points, in size and shape quite like a split pea.

Remedy: Any or all of the foregoing results may be obviated by *maintaining a temperature within the vulcanizing pot throughout the entire period which shall not exceed 300° F.*

FILLING THE TEETH.

BY VICTOR C. BELL, D. D. S.

Judging from the questions constantly asked the dentist, it is no exaggeration to say that very few people have a clear conception of the causes which lead to decay of the teeth. Experiments and observation have shown that these are numerous. Chief among them is the fermentation of particles of food lodged between the teeth, or in their pits or depressions during mastication. When through carelessness or indifference these deposits are not removed, under the influence of the warmth, moisture and the microbes present, fermentation takes place and an acid is generated which dissolves the enamel and dentine, leaving a cavity which constantly grows larger and deeper. The dentine is of a tubular structure, and into these tubules the microbes which constantly exist in the mouth penetrate, where they continue their deleterious work until the tooth is completely destroyed.

Microbes are minute vegetable organisms, some of the many species of which are so small that they are only visible to the highest powers of the microscope. They are the cause of a large class of infective or contagious diseases, and between them and the body there is a constant warfare.

The process of fermentation is of itself but the growth and multiplication of these minute organisms, and in the process of their life history they produce chemical charges and disruptions, with the consequent formation of many by-products, some of which are of an exceedingly poisonous nature. Some of these are the direct cause of decay of the teeth.

But there also exist indirect or contributing causes, and these may be anything which will lower the general tone of the system, and make it less able to resist the action of deleterious agents.

Among these secondary causes producing decay may be mentioned any protracted sickness, the lack of outdoor exercise, excessive study, anxiety or worry, all of which undermine and weaken the system. When the body is ill, no one organ can be said to be perfectly sound.

The teeth may be crowded or depressed, or there may be fissures which offer a ready means for lodgment of food. The walls of the teeth may not be dense, and their power of resisting decay may be very weak, or the food may not contain the necessary elements for nourishing the teeth, and hence the work of repairing the wear and tear of daily use may be but poorly accomplished.

Again, there may be a hereditary tendency to decay. That our ancestors suffered from any special ailment does not necessarily demonstrate that it will be reproduced in us; but it is probable that the same debilitating conditions will be inherited. Their consequences can, however, be avoided by proper and unremitting care. These causes are constantly at work, producing decay of the teeth and forming minute cavities, through which the decay rapidly progresses until the living matter of the tooth is reached. Unless this is checked, the tooth will be totally wrecked ; even if it be not wholly destroyed, it will be so badly decayed that it will threaten the welfare of the entire dentition, and therefore it may become necessary to extract it.

Many fearing that the filling of a tooth will be painful, refuse to have this done. But when the proper manipulation is employed, the operation is accompanied, if at all, by very little pain, and if the decay is of recent formation, by none at all. Every consideration then, whether it be the ultimate welfare of the tooth or the desire to avoid suffering and discomfort, prompts the patient to early attention to his teeth, before decay shall have proceeded so far as to cause toothache.

The teeth are composed of four principal parts: Enamel, Dentine, Cementum and Pulp.

ENAMEL. This constitutes the cap, outer covering, or occluding surface of the tooth. It is the hardest tissue in the animal body. Its great density admirably adapts it to the purposes of mastication of hard substances. The enamel is easily distinguishable from the dentine with the naked eye, by its clear, lustrous, and somewhat translucent appearance.

DENTINE. The dentine forms the principal constituent of the tooth. It is situated under the enamel and is permeated by a great number of minute canals, which connect with the pulp chamber. It is a hard, elastic substance, with a yellowish tinge, and is slightly translucent.

CEMENTUM. This forms a thin covering for the surface of the fang, or root of the tooth, and extends from its neck to the apex.

PULP. The pulp is a soft tissue occupying the pulp chamber, which is an elongated canal, wide at the crown and narrow at the root. It runs longitudinally through the center of the dentine. The pulp contains the nerves and blood vessels of the tooth. It is the vital part, and sends forth minute fibers of living matter through the microscopic canals of the dentine, to nourish and endow the tooth with sensation. As soon as the enamel is decayed through, the sensitive dentine rapidly disappears and the pulp chamber becomes exposed.

Frequently the decay of the sixteenth part of an inch is sufficient to lay bare the pulp. This is extremely sensitive, and the contact of any foreign matter causes the most exquisite suffering. The least change of temperature, or the exertion of any undue pressure upon it, will so irritate its nerve filaments as to produce severe toothache, and affect the entire nervous system of the head.

Before the pulp has become exposed, the operation of filling the teeth is comparatively painless. The filling lasts and the tooth remains strong, because the vital portions of the pulp have not been affected.

It is easy to discover when the dentine alone is exposed. This may be sensitive to the touch, to cold and to heat, but the pain is dull and passes away when the irritating agent is removed. When, however, the pulp is exposed, the pain is acute, constant, severe and agonizing. Thus the degree and character of the pain will indicate the amount of the decay. Should the tooth be neglected when the pulp has become exposed, the latter becomes inflamed, and the work of filling the teeth is very painful, and perhaps impossible; if the neglect be persisted in, the pulp dies.

Thus at the outset the dentist is confronted with three classes of diseased teeth: those in which the dentine alone is affected, those in which the pulp has been but recently exposed, and those in which, because of prolonged exposure, the pulp is either dead or dying. Of the first class I have already spoken. In a tooth of the second class the pulp can be cured by the application of soothing medicines, which may remove the irritation and subdue the inflammation and enable it to bear a filling. If, after being thus treated, the tooth be filled, a covering of secondary dentine may be formed by nature underneath the filling for the better protection of the pulp, and soon the tooth may become as sound as ever.

Concerning the third class of decayed teeth, there are three kinds: those in which the pulp has recently died, those in which there is more or less infection and inflammation, and those with a fistulous opening, with a more or less constant discharge of pus. The first can be cured with comparative ease. The second may be relieved if judicious means are employed, while the third may require a considerable time and the exercise of much patience and skill on the part of the dentist. The pulp chamber and canals must be thoroughly cleaned and disinfected, and this work is sometimes performed with great difficulty, as the canals are often crooked and difficult of access.

Should the dentist fill such a tooth, leaving the minutest particle of infected matter in the pulp canal, this will putrefy and generate gases, which, having no escape through the opening at the root of the tooth, press against the surrounding tissues, and produce abscesses and swellings, with their accompanying pains. After the whole territory has been thoroughly disinfected the canals must be effectually filled. It is well to insert a temporary filling to last for several weeks, and only after this experimental stopping has been sufficiently tried, and no gases have been generated or swellings supervened, should a permanent filling be substituted for the temporary one. If, however, the tooth becomes sore, it is an indication that inflammation is again active, and that unless it be reduced an abscess may follow. The filling must then be removed, and the tedious work of disinfection resumed.

It is apparent, then, that to postpone the work of filling a decayed tooth only increases the danger and suffering, while the result, when accomplished, is much less satisfactory.

There are some dentists who promptly apply an arsenical paste to sensitive cavities, whether the pulp is exposed or not, and patients have been led to avoid visiting them on this account, anticipating great pain. But this is very bad practice, and the more reputable portion of American dentists condemn it earnestly, and for some of the following reasons:

First. Because when devitalized there is always the liability to putrefaction and the formation of an abscess.

Second. Because it is much easier to fill a live tooth than a dead one.

Third. Because a dead tooth is liable to many diseases, and is not as permanent or as useful as a live one.

To destroy the pulp quickly arsenic is employed. Unless this be cautiously and skillfully used, there may be intense pain. The cavity must be carefully and delicately cleaned of all foreign material, the irritability of the pulp must be allayed, and then a proper devitalizing agent must be so inserted that no pressure will be exerted. When this is properly done, no pain will ensue. But it is much better if the pulp can be saved alive, and the honest dentist will therefore put forth every exertion to do this.

A few words as to the materials to be used in filling the teeth. Gold and tin possess all the requisite qualities for beautiful and lasting fillings. Silver is only used in the form of an amalgam with mercury. Gutta-percha and cement form excellent temporary fillings for teeth so decayed that they cannot stand the strain incident to the filling with gold or tin-foil. The choice of materials should, however, be left to the dentist, as he best knows the peculiar conditions and what they demand.

SOME ERRONEOUS IMPRESSIONS CORRECTED.

BY C. S. CASE, M. D., D. D. S.

We all dislike to be misquoted in matters of little moment, or accused of advocating any theory or practice that we believe to be false. This feeling is intensified if the subject happens to be one that has grown dear to our professional lives, and especially if we are advertised by the pen of an able critic as teaching that which we have for years earnestly endeavored to combat.

I therefore desire to call attention to the leading editorial in the April number of THE DENTAL PRACTITIONER AND ADVERTISER, which reviews a paper lately read by me and which does not, I think, do it justice. The title of it is, "When Should Congenital Cleft Palate Receive Surgical Treatment," and it was published in full in the March number of *The Dental Review* and in the number for March 30th of *The Journal of the American Medical Association.*

The first paragraph of your review is as follows:

> "A paper was lately read before the Chicago Dental Society, upon 'The Evils of Early Operation in Cleft Palate Cases,' by Dr. C. S. Case, than whom no one has made greater advancement in the manufacture of artificial appliances for its amelioration. In the paper and the discussion which followed, the line was clearly drawn between mechanical and surgical procedure. Naturally, Mr. Case, because of the success which he has met with in corrective measures later in life, believes in the inutility of surgical procedures, and so expressed himself. The paper was an excellent resumé from the standpoint of its author, but we cannot but think that there is much to be said in favor of surgical measures. A serious operation upon a young child but a few days old seems formidable, and our sympathies are warmly excited at the very thought of subjecting the helpless little being to the knife of the operator. And yet there are potent reasons that lead to the belief that surgical procedures which do not involve great loss of blood cannot be instituted too soon after the functions of independent existence are once fairly established."

This is followed at considerable length by an able argument in favor of the stapholoplastic operation for congenital cleft palate in early childhood or infancy; the whole being calculated to create the belief that in all instances Dr. Case "believes in the inutility of surgical procedure, and so expressed himself."

I am very glad to be able to inform the readers of your valuable journal that I have never held nor expressed such a belief; nor have I ever written a paper upon "The Evils of Early Operations in Cleft Palate Cases."

On the contrary, the paper in question—as any one can see who will take the trouble to read it—most emphatically states my belief in favor of early surgical treatment.

In one place in my paper, I quote from a well-known dentist, where he sweepingly denounces surgical interference in nearly every case, and I give my opinion of his words as follows:

"This never could have been written with a full knowledge of the success of surgery when employed during babyhood, or at a time, I claim, when surgical interference should be considered as imperative as the operation for lacerated perineum and other conditions which are discovered and demand surgical treatment as early as advisable after birth."

If this is not plain enough, let me call your attention to the closing paragraph of my paper:

"When should congenital cleft palate receive surgical treatment? I answer most emphatically, as soon after birth as safety to life will warrant. But after five years of age and even earlier, be the cleft great or small, the operation should be performed only in those rare instances which promise an unquestionable assurance of resulting in the desired length and mobility of the united velum palati."

These words, it seems to me, can convey but the one meaning, quite contrary to that which you claim was the tenor of my paper, — your criticism being only upon the opposition to operating during infancy.

I am well aware that successful operations have been performed for many years upon infants. During the years from '81 to '85, while connected with the dental department of the University of Michigan, I assisted Dr. Donald McLean in a number of operations upon infants for cleft palate, all of which, so far as I have been able to learn, resulted in a perfect restoration of all the functions of speech. His method was partly to close the fissure through the hard palate by forcing the cartilaginous palate bones toward the mesial line, commencing within the dental arch.

Dr. Brophy's operation is more modern, and, doubtless, far superior. My greatest hope is that he will reap the renown which he deserves for its introduction, and that its success will at no distant day make this operation during infancy as imperative and obligatory upon surgeons as other conditions which demand surgical treatment as early after birth as safety to life will permit. So much for the operation during infancy and early childhood.

The principal object of my paper was to discountenance in the strongest possible manner the very questionable and inexcusably common practice of operating surgically for congenital cleft palate later than 40, 30, 20 and even 10 years of age, in those instances in which it is impossible for surgery to materially improve vocal speech. I say:—

"Unfortunately it is true that almost every professor of surgery in medical colleges, who has had more or less experience in operating for congenital cleft palate, will perform this operation before his class upon every patient who presents for treatment, of whatever age or condition of cleft, or tissues.

I can understand how there may be an occasional case of cleft palate with sufficient redundancy of tissue to warrant a skillful surgeon in attempting an operation for a patient after the age of 5, 10, or even 15 years, and with every probability of obtaining a natural palate that will meet all the requirements of speech. But successes of this kind are so very rare they prove nothing, neither do they justify the wholesale attempts that are made where there is no possibility of doing more than to surgically unite the borders of the cleft. And far too often, as Dr. Kingsley says: 'When the only apparent object was to gain *èclat* by the skillful use of the knife in a difficult case before an admiring audience, and with no possible hope of even success.'

Surgical success in these operations consists apparently in a permanent closure of the fissure by uniting the tissue along the border of the cleft. But this is not success, unless the only real object that is worthy of consideration under the circumstances can be attained, *i.e.*, a palate which in conjunction with the pharyngeal muscles will enable the patient among other things to completely close the naso-pharyngeal passage. This is absolutely necessary for perfect speech; not only to obtain the proper quality of tone, but to enable them at times to forcibly expel all the air, which is the vehicle of voice, through the mouth, and often through a narrowed opening with intensified force,—as in speaking the words hiss, hush, etc. And again, in those vocal interruptions which can only be perfectly produced by a complete closure of every avenue of escape of an accumulated pressure of air, with the production of a sudden vocal explosion at the lips, or between the tongue and different locations along the roof of the mouth or palate, as in pronouncing the letters B, T, K, etc."

My object also was to show how in those cases where surgery almost invariably fails, sure and perfect relief could be obtained by a properly constructed artificial appliance, as instanced by many cases in my practice.

In order to present unquestionable proof of the artificial method, I introduced to the society three patients who were selected with a view of showing the effect of inserting the artificial palates at the different ages of 14, 19 and 30 years; and as I say in my paper:—

"When you hear these gentlemen speak, as they have kindly consented to, after the reading of my paper, you will be convinced, I think, that were you to meet either one in private conversation—where the opportunity of using a lower tone than is possible in this hall would be greatly to their advantage—that nothing in the character of their speech would suggest the deformity under which they labor."

* * * * * * * *

"To recapitulate the claims of my paper, the first point I have attempted to make and conclusively prove is that the artificial method of treating congenital cleft palate for patients under 15 or 18 years of age can be relied upon when skillfully performed, as furnishing a sure means by which may be attained perfect vocal articulation, free from the undesirable nasal tone which is characteristic of this deformity. And while the same success can not always be promised at a more advanced age, a decided improvement in speech has invariably resulted in all cases where I have been allowed an opportunity to properly develop the artificial palate according to the needs and possibilities of the muscles; and, on their part, there has been a proper persistency in training the voice to speak distinctly. There are many instances where patients have begun wearing artificial palates as late as 30 years of age whose speech in ordinary conversation would not produce a suspicion of their deformity, as instanced by one of the patients whom I shall present at this meeting.

With the surgical method of treating cleft palate, when performed later than infancy or very early childhood, nothing like the above results have been attained, with perhaps an exception in a few isolated cases. Certainly nothing to warrant the most skillful surgeon in operating, as they commonly do, for patients older than 20, or even 10, where the cleft extends partly through the hard palate, and with the tissues of the soft palate comparatively scant from non-use during the age of its growth and development."

The following is taken from the approved minutes of the January meeting of the Chicago Dental Society, at which the above paper was presented:

"The several patients, to whom Dr. Case made reference in his paper, were presented to the society, and through the medium of short extemporaneous speeches, demonstrated the fact that in every instance their power of speech was fully in accord with his claims.

One young man gave a remarkable exhibition of his ability to whistle, which was a surprise to tell who knew the impossibility of performing this function with a cleft of the palate, unaided by surgical or artificial means."

Signed by A. H. Peck, *Secretary Chicago Dental Society.*

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PREPARATION OF (NOT CAVITIES, BUT) TEETH FOR SO-CALLED PERMANENT FILLING.

BY J. EDW. LINE, D. D. S., ROCHESTER, N. Y.

Abstract of a paper read at the Twenty-seventh Annual Meeting of the Seventh District Dental Society, held in Rochester April 23 and 24, 1895.

The most striking thing about this alleged paper is the clumsy look and sound of its title, but which carries with its questionable get-up, nevertheless, the exact phase of the subject that we have elected briefly to discuss.

Unfortunately for dentistry, some of its operations are characterized as temporary, some of them permanent; notwithstanding, the so-called temporary operation often calls for many times the knowledge, thought and skill involved in operations frequently spoken of as permanent. To make a "temporary set of teeth" is far more trying both at the time and subsequently than anything likely to be met with in the construction of a "permanent set." The conditions in the former case are numerous and complicated, and to meet them is no mean achievement; and yet the notion prevails that anything is good enough for the denture, and any fee too great. All this in true forgetfulness that the so-called temporary set is the only permanent thing in the case, the changes that make the term "temporary" at all applicable being confined to the maxillaries.

So of the product of the operation of filling; gold and amalgam fillings are permanent without a doubt, or can easily be made to meet this requirement; but, if placed in teeth, as our friend Dr. Palmer would say, "below grade," nothing more transitory can well be imagined. Again, gutta-percha and oxyphosphate, the latter especially a most fickle material, so generally classed as temporary products, may do duty for years when only intended to tide the teeth over one or more of their trying seasons.

The end and aim, of course, of the operation of filling, is the preservation of teeth, or granting their inevitable loss in a civilized community, to postpone the day of their final dissolution as far as possible. To this end, the so-called permanent filling, whether of gold, amalgam, or other metal, singly or combined, is desirable, in many cases essential, if one would compensate for the inattention and general neglect of those for whom operations of a so-called temporary character would otherwise be performed. But that fillings of this kind may be made to endure, hold their place without general disintegration of the adjacent tooth-tissue, the teeth themselves must be made fit to receive and retain these artificial restorations. A right condition of the part to be restored is essential to success. The mechanics concerned in the formation of the cavity can do much, but far more important to the durability and continued good service is the chemistry—the physiological chemistry—of the teeth in question, and the medium in which they are constantly bathed. The tissues must be cultivated, and while this is done to some extent intuitively by all, the method is haphazard, and the reason for it not always clear.

Two classes of teeth seem to call loudly for proper preparation for more substantial and lasting operations. The first of these is met with in children. The teeth are soft, prone to decay, sensitive, and correspondingly difficult to handle. To fill these teeth with gold, and in some cases amalgam, is to invite decay—to temporize with them—to add another element to the conditions that make for their destruction. To fill with gold is to fill again and again, until a stage is reached when this excessively rapid disintegration meets with a check, whereat the tooth seems to take on a new lease of life, and for the first time in their history the dentist feels just a bit encouraged. Long observation has convinced us that this turning of the tide corresponds very closely with the period known as puberty, when the young miss begins to bud into premature womanhood, takes to longer dresses, and becomes less pronounced in her "don't care for the boys;" when the lad sheds his knickerbockers, thinks he will shave (using, of course, his father's razor), and wonders now and then at the number and quality of the cracks in his voice. Chalky enamel gives way to that offering greater resistance to cutting instruments; what was opaque has become translucent; dentine loses its rubber-like consistency; the oral secretions become less markedly acid, and the green-stain sign in children's teeth begins to disappear.

The primary cause of this revolution in things dental is undoubtedly physiological, which is soon supplemented by reasons ethical and hygienic, begetting interest in the appearance and comfort of the teeth, and to that end the diligent use of dentifrice and brush.

But that this desirable end may be attained, we must have the children at the right time and all the time, the co-operation of the parents, then the patience and intelligence to determine and apply methods that conduce to the preservation of tissue already on the ground, and the bringing of more into this newly-conquered territory. Cavities should be filled, and especially in this class of teeth, for at least two reasons; first, to reduce the surface open to attack of the oral secretions; and, second, to relieve the pulp of unnecessary waste of energy and material in feeding or satisfying this youthful secretion that is ever crying "More!" But filling serves another purpose; it favors recalcification of dentine (and perhaps enamel); also the formation of secondary deposits on the walls of the pulp-chamber, both of which are to be desired with reference to so-called permanent filling at a later date.

Now, recalcification of dentine is possible only in living tissue; therefore, it is idle to look for any change for the better in dead dentine over and next the pulp, though that organ may be several removes from the cavity of decay; in other words, not exposed. Secondary deposits on the walls of the pulp-chamber make necessary a like living connection between the pulp and the irritant at the peripheral end of the tubuli. Without this living string of protoplasmic matter, recalcification and dentine of repair are out of the question.

Another condition of success is that the irritant at or near the periphery of the dentine (and nearly everything in contact with that tissue must be regarded as an irritant, in that it is a foreign body), shall be moderate in its action. It is a matter of common observation that secretions concerned in the lighter and more rapidly destructive forms of decay, give the dentine no chance to recalcify nor the pulp an opportunity to build for itself a protective of secondary dentine; while secretions that effect the darker, even black decays, are so slowly destructive that both recalcification and dentine of repair are foregone conclusions.

This latter condition, however, cuts no figure in the class of teeth under consideration. To meet the former, we must fill. If with gold, we but temporize. Children are not suitable subjects as a rule for gold treatment. More than that, constructive changes in dentine never occur under gold. Amalgam of some kinds may prove nearly as bad as gold in these teeth, the color objection applying only to front teeth. It has this, however, to commend it, when of low grade, over gold,—it does induce constructive changes in dentine. Tin foil meets the requirements of the case, except as to manipulation, the difficulties of which preclude its use in the cases of some children. Gutta-percha has much to commend it; but here, too, dentine never recalcifies under this material alone, nor secondary deposits occur in the pulp-chamber. Oxyphosphate of zinc has much to commend it, much also to condemn its use in these cases. If remote from the pulp, little if any harm can come of it; if near the pulp, whether the dentine is hard or soft, putrefaction or desiccation seems to be certain sooner or later.

Having exhausted the list, what shall be done; no one of these materials filling the bill? Gold and gutta-percha are precluded, if for no other reason than that they do not favor constructive changes in dentine; amalgam is unsightly, at least in the anterior teeth, and favors extreme thermal changes in deep cavities in comparatively hard dentine; also in shallow cavities in dentine that is soft; tin is difficult of manipulation in the majority of cavities, and the more so the younger the patient; oxyphosphate of zinc is death to the pulp where the demise of that organ can be least afforded.

The way out of the difficulty is by combining with reference to improving dentine and enamel in young and, therefore, for the time, low grade teeth. Alloy or amalgam incorporated with gutta-percha answers the purpose; tin foil covered with gutta-percha or oxyphosphate also; the saturation of dead dentine with a resin ought also to enable one to cultivate the dental tissues. The method we would suggest is this: Remove more or less of the dead dentine; dehydrate and desiccate by any of the usual methods; saturate with an antiseptic (eucalyptol, for example,) in which balsam is soluble; cover with one of the combinations already mentioned.

Of the second class of teeth in which it is desirable to do preparatory work, little need be said, for that already long drawn out more than covers the ground. We refer particularly to teeth as we find them during pregnancy and lactation. No one believes in this day that the mother's teeth contribute directly to the building up of teeth in utero; but there is little if any question that the majority of women find it impossible to feed for two. Failing in this, the same thing obtains as in the case of a young plant at the root of an older one,—both draw upon the same limited supply; but the more youthful and vigorous drawing more than its legitimate share, induces a partial starvation in the other member. In the cases in question, things occur that must be compensated for if we would bridge over this critical period in tooth history.

The drain through decayed places and from decayed surfaces by the oral secretions must be checked by closure of the cavities, which at the same time reserves for other and equally important purposes the energies and materials of the tooth pulp, and recalcification is brought about by the application to these surfaces of a material or combination of materials that favors constructive changes in dentine.

GERMAN STUDENTS AND GERMAN TEACHING.

BY R. H. HOFHEINZ, D. D. S., ROCHESTER, N. Y.

Before I left Rochester I promised to send THE PRACTITIONER a resumé of my observations of German methods of studying, with special reference to medicine and dentistry. It took a long time to fulfill this promise, and the readiest excuse could probably be found in the Frenchman's translation of the Biblical saying:

> "The ghost is voluntary, but the meat is weak."

Many a time, however, the latter was the more voluntary of the two.

I have been doing some work in bacteriology at Berlin, under Prof. Rübner and Günther. Prof. Miller, *our* Miller, unfortunately confines his public work at the university to lectures on "Operative Dentistry," with a few on the "Micro-organisms of the Buccal Cavity," illustrated by lantern pictures. His great work is done at his laboratory, where he gives no instructions. He was, however, more than kind to me. After I had taken my preliminary courses at the Bacterial Institute he allowed me at his laboratory every day, and gave me every possible assistance. I had a splendid opportunity to learn to know and appreciate the grand and thorough methods of Miller's labors. He is not only the greatest scientist in the whole dental profession, but he is one of its noblest men.

Concerning the educational system of Germany, it will not be necessary for me to elaborate. The world knows the value of German schooling. The scholar is not only found among the professional men, but he is easily detected among all classes. Literary knowledge is particularly widespread, and I believe that Shakespeare is nowhere more read and better understood than in Germany, where the translations of his works are reckoned among the masterpieces of literature. It is a known fact that the German commentaries on Shakespeare's writings are as great, both qualitatively and quantitatively, as are the English. There is scarcely an educated German who is not master of at least one, and frequently two languages, besides his native tongue.

This thoroughness of education makes itself felt, especially among professional men. A medical man is not only conversant with his professional literature, but he has a broad knowledge in almost every branch of science, the training previous to his entry into the university ensuring this, and I know many a medical student who, aside from his medical lectures, attends those in literature, astronomy or some other science. But the question which particularly interests us, is: Do they have better medical and dental men than America?

First of all, how do medical men get their education? The boy at about the age of ten enters the "Gymnasium," where he remains nine years, the general studies therein being: Latin, Greek, French or English, arithmetic, its related branches, the natural sciences, etc. After making the prima, he is ready to enter the university as a medical or dental student. The medical student must take at least ten semesters; usually, however, he takes eleven. The winter semester lasts from October to April; the summer semester, from April to July. After the fourth semester the student commences his "Tentamen physicum." The first four semesters are devoted to the preparatory branches—physics and chemistry principally, the natural sciences, anatomy and physiology.

After passing the "physicum," the second part, known as the "clinical semesters," begins.

The fourth and fifth semesters are devoted to the lectures on pathology, therapeutics, anatomy and such technical skill as required in percussion and auscultation.

After passing these branches, the student enters as "practicant" into the different clinics, and at the beginning of the tenth semester he must be ready for examination. Physiology is usually taken "repetendo" during the eighth and ninth semester.

So much for medicine.

DENTAL STUDENTS.

Much controversy has lately arisen as to the necessity of a dental student absolving the nine classes of the gymnasium, and many have advocated the passing of the Realgymnasium (seven years, I believe,) as sufficient for his preliminary education.

The Realgymnasium excludes Latin and Greek, and substitutes more of English, French and the natural sciences. This question is not entirely settled, and the student now enters the university with the same preparatory knowledge as his medical confrère.

The university studies of the dental student need not exceed four semesters, or two years.

The only German universities that give special courses to dental students are: Berlin, Leipzig, Breslau, Halle, Freiburg, Kiel and München. The time of the dental student's studies is usually divided as follows, if four semesters are taken:

First. Physics, chemistry, anatomy, physiology, dental technics.

Second. Physics, chemistry, anatomy, physiology, histology, lectures on operative dentistry, practical operative dentistry, dental technics.

Third. Physiology, general pathology, surgery, medical and surgical clinics auscultando, therapeutics, lectures on operative dentistry, practical operative dentistry and dental technics.

Fourth. Surgery, surgical and medical polyclinic auscultando, operative dentistry, dental technics.

This is about the course of the dental studies, and they do not seem to deviate much from those of our American universities, with one exception; the material which enters the university is differently prepared from ours. The student who enters the German university is accustomed to study, his cerebral hemispheres work together, the nine years of preliminary training having necessitated such combined action.

For this reason the German physician, and I believe the German dentist, possesses more real scientific knowledge and education than his American competitor.

Now the question would arise: Is the German medical and dental practitioner practically better qualified than the American medical and dental practitioner?

The medical part interests us less. Such men as Virchow, Helmholtz and DuBois Raymond, have thus far not grown on American soil. Why? Because they are greater men than any we have in America? No! Because their preliminary education has equipped them with minds better prepared for the study of the minutest ramifications of all the sciences.

The lack of preliminary education of their students is the one fault which so many of our American universities possess.

Have the Germans better dentists than the Americans? God bless them, no! With all the learning the German possesses, he lacks that intellectual dexterity which the American professional man has attained to in such a high degree.

The German is ponderous; the American is always ready to use his knowledge for practical purposes. He wants to see a positive result from what he has learned. Give an American boy the same preliminary training as the German, and he will surpass him every time. It is for this reason that I consider the American medical man an equally good practitioner, and the dentist a superior one.

The tendencies of our American universities are of such a laudable nature in the direction of bettering all existing faults, that I believe the time will come when the western hemisphere will attract people, not only for its material riches, but for its intellectual and artistic wealth also.

This exposé has become much longer than I had anticipated, but the ground is very broad.

Concerning the dental infirmary of Berlin, which, aside from the dental hospitals of London, is the only one that I have visited in Europe, I can safely say that it ranks with the best ones of America. The students are doing relatively good work, their methods are copied from our Amercan schools, and therefore differ but slightly.

They do considerable gold filling, a thing the German dentist does not do very much of when he gets into his practice.

The operative branch of the college is under Prof. Miller's direction, which accounts for its superiority.

The infirmary work at all other German colleges is said to be considerably inferior.

OBSERVATIONS OF A THIRD-YEAR STUDENT.

BY F. E. CLOUD, UNDERGRADUATE.

Read before the Barrettonian Society of the Dental Department of the University of Buffalo.

Great libraries, with their well-filled volumes, the life work, perhaps, of many a profound thinker, are to-day open to the searcher after knowledge. Men of education and experience are ready with their lectures and illustrations; demonstrators are putting into practice and testing many new principles, thus offering practical illustrations for the student's acceptance or rejection. But without a keen observation and serious interest on the part of the student, all these golden opportunities are as pearls before swine.

It is the purpose of this paper briefly to discuss a few points that have come under the observation of a third-year student, rather than to review subjects of general interest presented by men of greater experience. To observe closely, then to think deeply, and finally to follow his best convictions is the privilege of every one, but it is the duty of the professional man. In endeavoring to do this during the past summer, I was led to perform an operation that gave much satisfaction, both to myself and a patient who entrusted himself to me.

At his earnest request, I undertook to prolong the use of the second right superior molar, which was broken down on three sides, the dentine of the crown being nearly all gone. I say nearly all, for there was but a thin layer against the enamel of the buccal surface. The enamel of the mesial, distal and palatal surfaces had been lost by decay and mechanical abrasion. The pulp canals had been filled with oxyphosphate some ten years previous to this, and a part of this still remained.

I drilled into each pulp canal about one-fourth of an inch, and inserted a screw similar to those used in crown and bridge work. On each screw

I turned a hook by use of round nose pliers, and after making sure they were cut the right length, I set these screws in cement, each inclining a little toward the other. These formed a U-shaped space for retention, and they were assisted by the small hooks turned at the end of the screws.

I then prepared a band of copper in the same manner in which we would prepare a band for a shell crown, cutting away for festoons, giving it the proper contour, soldering the band and getting the proper length for occlusion, and then driving the band to place.

I filled inside this band and around the screws with amalgam, packing it very hard, and extracting all the surplus mercury possible by the use of Japanese bibulous paper.

I then finished up the coronal surface of the filling to a correct occlusion, and dismissed the patient with instructions to be careful of it for a few hours, and to return the following day. I was pleased to learn at the second visit that the filling was still in position, and had been put to considerable use during the first twenty-four hours.

I now cut away the copper band, ground the angles down sufficiently to make a properly contoured molar crown, polished the whole up nicely, and the work was finished. I call this an amalgam crown with natural facing. This work was done in July, and is still in position, and giving good satisfaction.

I do not remember having heard of such an operation with amalgam, and so shall watch this piece of work with much interest. Even should it last but two or three years, that will be ample justification for the experiment.

By the use of copper bands or matrices, I find in many cases the operator can restore the full occluding surfaces of bicuspids and molars more perfectly and in less time than without them. I believe this a wise thing to do, as by restoring the full masticating surfaces we keep the antagonizing teeth in proper position, and give back to nature the surfaces lost by decay, and therefore the food is properly masticated before entering the digestive tract.

Another observation that I have made refers to the criticisms of practicing dentists which one commonly hears. One is condemned because he leaves the impression of his cuff buttons on his patient's cheek. A young lady remarked last week in my hearing: "He is a very good dentist, but he has the bad habit of filling a patient's mouth with rubber dam or napkins, and then asking all sorts of questions, which can only be answered by an inarticulate gurgle."

A lady asked me a few days ago if it was customary among dentists to leave a blood-bespattered napkin on the head-rest of the chair for two weeks in succession, as she had known it to be in one office.

Not long since a patient came into the college infirmary and handed a [illegible] she had brought with her to the student who had been [illegible] and requested that he would wash his hands with it. [illegible] how persistently and carefully we are trained in clean[illegible] now the teachers in charge of the infirmary will lecture us if [illegible] going to the chair without first having thoroughly washed our [illegible] brushed our clothes. So you may imagine the indignation of [illegible] patient who was offered the soap. The patient's teeth were not in a [illegible] good condition, and he told her that she had better use the soap to [illegible] her mouth with, as it needed it a great deal more than his hands. [illegible] left her, and got reprimanded by the demonstrator for incivility, but I am inclined to think that he was more than half right, for he did not need to be told that his hands must be carefully washed before even approaching a patient. But there was a lesson for every student and for every dentist in the incident, for it shows that patients are more particular about these matters than many of us imagine.

Let me offer a suggestion that seems to me a very good one. The marble wash basin should be located in full view of the patient, for no matter how clean the hands may be, if the patient observes the cleansing process it will be a source of satisfaction. There are many other observations that I have made in the time that I have spent in the infirmary. Some of them will be a source of profit to me during my future life, I hope, but I have not now the time to call them to your attention. Besides, there is no doubt that each of you have made your own, and perhaps do not need that they should be alluded to here.

THE NEW DENTAL LAW OF THE STATE OF NEW YORK.

Approved by the Governor May 12, 1895.

AN ACT to amend article nine of chapter six hundred and sixty-one of the laws of eighteen hundred and ninety-three, entitled "An act in relation to the public health, constituting chapter twenty-five of the general laws," by revising said article and vesting the power of granting licenses to practice dentistry in a State board of dental examiners and assimilating in that regard the licensing of dentists to the licensing of physicians, and also to provide punishments for violation of the provisions of this act.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Article nine of chapter six hundred and sixty-one of the laws of eighteen hundred and ninety-three, entitled "An act in relation to the public health, constituting chapter twenty-five of the general laws," is hereby amended so as to read as follows:

ARTICLE IX.

PRACTICE OF DENTISTRY.

Section 160. Licentiates.
161. State board of dental examiners.
162. Examinations, licenses, registration, fees, revocation of licenses.
163. Construction of this article.
164. Penalties.

Definitions, as used in this article.—The terms university, regents and physicians have respectively the meanings defined in article eight of this chapter. Board, where not otherwise limited, means the board of dental examiners of the State of New York. Registered medical or dental school means a medical or dental school, college or department of a university, registered by the regents as maintaining a proper educational standard and legally incorporated. Examiner, where not otherwise qualified, means a member of the board.

§ 160. Licentiates.—Only the following persons shall be deemed licensed to practice dentistry:

1. Those duly licensed and registered as dentists in this State prior to the first day of August, eighteen hundred and ninety-five, pursuant to the laws in force at the time of their license and registration.

2. Those duly licensed and registered after the first day of August, eighteen hundred and ninety-five, pursuant to the provisions of this chapter.

§ 161.—State board of dental examiners.—On the first day of August, eighteen hundred and ninety-five, the State board of censors of the Dental Society of the State of New York, as the latter body shall be composed at the date of such appointment, shall become the board of State dental examiners. The existing division of said censors into four classes and their terms of office shall remain the same for the said board, except that said terms shall expire on the thirty-first day of July in each year. Before the day when the official terms of the members of any of said classes shall expire, the regents shall appoint their successors, to serve for the term of four years from said day. Such appointments shall be made from nominations made by such society from a list of nominees not larger than the number of the outgoing class furnished prior to the third Tuesday in May of each year by the State Dental Society, and no one shall be nominated or appointed who is connected with the faculty of any dental school or college, but this shall not be construed as applying to the present State board of dental examiners until the terms of office for which they were last elected shall have expired. In default of such nominations, the regents shall appoint such examiners from the legally qualified dentists in the State belonging to the said State Dental Society. The regents shall also fill vacancies in the board that may occur by death, resignation or otherwise than by expiration of a term of office. All nominations and appointments shall be so made that every vacancy in the board shall be filled by a resident of the same judicial district in which the last incumbent of the office resided. The board shall convene at the call of the secretary of the regents within not less than two weeks after appointment and organize by electing, to serve for one year, a president and secretary. These officers shall be elected annually. No person shall be appointed an examiner unless he has received a dental degree from a body lawfully entitled to confer the same, and in good standing at the time of its conferment, and has been engaged within the State during not less than five years prior to his appointment in the actual and lawful practice of dentistry. Cause being shown before them, the regents may remove an examiner from office upon proven charges of inefficiency, incompetency, immorality or professional misconduct.

§ 162. Examinations.—The board, in connection with the regents, shall frame rules from time to time for the regulation of their own proceedings and for the examination of candidates for license to practice dentistry. But no person shall be examined by said board unless he be at least twenty-one years old, of good moral character, and shall receive a certificate from said regents that he has satisfied them by examination or otherwise, that prior to commencing his professional studies he had a preliminary education equivalent to that required of students entering the dental colleges of this State, which, after January first, eighteen hundred and ninety-seven, shall be not less than a full high school course; and either has been graduated in course from a registered dental school, or else, having the degree of doctor of medicine, has pursued thereafter a course of special study of dentistry for at least one year in a registered dental school, or holds a diploma or license conferring full right to practice dentistry in some foreign country and granted by some registered authority. Any member of the board may inquire of any applicant for examination concerning his qualifications and may take testimony of anyone in regard thereto, under oath, which he is hereby empowered to administer.

Degrees.—A person having lawfully received a dental degree in course from a registered dental school, or the degree of Doctor of Medicine from a registered medical school, and having thereafter lawfully practiced dentistry for the term of five years, may apply to the regents for the degree of Master of Dental Surgery, which degree the regents may confer after examination of the applicant by the board under such rules and regulations as the regents and the board shall frame. No degree in dentistry shall be conferred in this State on any candidate who has not before matriculation in the institution conferring it, filed the certificate of the regents that he has had a satisfactory preliminary education, which for those matriculating after January first, eighteen hundred and ninety-seven, shall be not less than a full high school course.

Licenses.—On certification by the board of dental examiners that a candidate has successfully passed the examination and is competent to practice dentistry, the regents shall issue to him their license so to practice pursuant to the rules established by them. Upon the recommendation of the board, the regents may also, without the examination hereinbefore provided for, issue their license to any applicant therefor who shall furnish proof satisfactory to them that he has been duly licensed to practice dentistry in any State or country after full compliance with the requirements of its dental laws, and has been thereafter lawfully and reputably engaged in such practice for five years next preceding his application; provided, that his preliminary and professional education shall have been not less than that required in this State. The regents may also license any applicant on the certificate of the board that after due investigation or examination it finds his education and professional attainments and experience of not less than five years in actual practice to be together fully equal to the requirements for license in this State. Every license so issued shall state upon its face the grounds upon which it is granted and the applicant may be, required to furnish his proofs upon affidavit.

Registration.—Every person practicing dentistry in this State and not lawfully registered before this act takes effect, shall register in the office of the clerk of the county where his place of business is located in a book kept by the clerk for such purpose, his name, age, office and post-office address, date and number of his license to practice dentistry and the date of such registration, which registration he shall be entitled to make only upon showing to the county clerk his license or a duly authenticated copy thereof, and making an affidavit stating his name, age, birthplace, the number of his license and the date of its issue, that he is the identical person named in the license, that before receiving the same he complied with all the preliminary requirements of this statute and the rules of the regents and board as to the terms and amount of study and examinations; that no money, other than the fees prescribed by this statute and rules, was paid directly or indirectly for such license, and that no fraud, misrepresentation or mistake in a material regard was employed or occurred in order that such license should be conferred. The county clerk shall preserve such affidavit in a bound volume and shall issue to every licentiate duly registering and making such affidavit a certificate of registration in his county, which shall include a transcript of the registration. Such transcript and the license may be offered as presumptive evidence in all courts of the facts stated therein. The county clerk's fee for taking such registration and affidavit and issuing such certificate shall be one dollar. Any licentiate practicing dentistry in any county of the State other than that in which he first registered shall in like manner register in the latter county also, and may do so upon presenting to the clerk thereof his certificate of registration from the clerk of a former county and the payment of a fee of twenty-five cents.

Examination fees.—Every applicant for license to practice dentistry shall pay a fee of not more than twenty-five dollars. From the fees provided by this article the regents may pay all proper expenses incurred by them under its provisions, and any surplus at the end of any academic year shall be paid to the society nominating the examiners to defray its expenses incurred under the law.

Revocation of licenses.—If any practitioner of dentistry be charged before the regents with unprofessional or immoral conduct, or with gross ignorance or inefficiency in his profession they shall notify him to appear at an appointed time and place, with counsel if he so desire, before the board to answer said charges, furnishing to him a copy thereof. Upon the report of the board that the accused has been guilty of unprofessional or immoral conduct or that he is grossly ignorant or inefficient in his profession, the regents may suspend the person so charged from the practice of dentistry for a limited season or may revoke his license. Upon the revocation of any license the fact shall be noted upon the records of the regents and the license shall be marked as cancelled of the date of its revocation. Upon presentation of a certificate of such cancellation to the clerk of any county wherein the licentiate may be registered, said clerk shall note the date of the cancellation on the register of dentists and cancel the registration. Any person whose license shall be suspended or cancelled shall be deemed, while such punishment is in force, an unlicensed person and as such subject to the penalties prescribed for other unlicensed persons who practice dentistry.

§ 163. Construction of this article.—This article shall not be construed to prohibit an unlicensed person from performing merely mechanical work upon inert matter in a dental office or laboratory, or the student of a licentiate from assisting his preceptor in dental operations while in the presence and under the personal supervision of the instructor, or a duly licensed physician from treating diseases of the mouth or performing operations in oral surgery. But nothing in the provisions of this article shall be construed to permit the performance of dental operations by any unlicensed person under cover of the name of a registered practitioner. Any student of dentistry whose certificate of study under private preceptorship shall have been duly filed with the secretary of the State Dental Society at the time this act takes effect pursuant to the provisions of law then in force, may present himself for examination to the board under the same conditions as those under which he might have presented himself for examination before the censors of the State Dental Society under the laws in force when his certificate was filed; providing, however, that he shall file a notice with the regents on or before the first day of September, eighteen hundred and ninety-five, that he purposes availing himself of this exemption.

§ 164. Penalties.—(*a*) A person who, in any county of the State, practices or holds himself out to the public as practicing dentistry, not being at the time of said practice or holding out a dentist licensed to practice as such in this State and registered in the office of the clerk of such county pursuant to the general laws regulating the practice of dentistry, is guilty of a misdemeanor, and punishable upon conviction of a first offense by a fine of not less than fifty dollars, and upon conviction of a subsequent offense by a fine of not less than one hundred dollars, or by imprisonment for not less than two months, or by both such fine and imprisonment. Any violation of this section by a person theretofore convicted under the then existing laws of this State of practicing dentistry without license or registration shall be included in the term a subsequent offense.

(*b*) A person shall be deemed guilty of a misdemeanor, and upon every conviction thereof shall be punished by a fine of not less than five hundred dollars or by imprisonment for not less than six months, or by both fine and imprisonment, who

(1) Shall sell or barter or offer to sell or barter any diploma or document conferring or purporting to confer any dental degree or any certificate or transcript made or purporting to be made pursuant to the laws regulating the license and registration of dentists; or,

(2) Shall purchase or procure by barter any such diploma, certificate or transcript with intent that the same shall be used as evidence of the holder's qualification to practice dentistry, or in fraud of the laws regulating such practice; or,

(3) Shall, with fraudulent intent, alter in a material regard any such diploma, certificate or transcript; or,

(4) Shall use or attempt to use any such diploma, certificate or transcript which has been purchased, fraudulently issued, counterfeited or materially altered either as a license or color of license to practice dentistry or in order to procure registration as a dentist; or,

(5) Shall practice dentistry under a false or assumed name; or,

(6) Shall assume the degree of bachelor of dental surgery, doctor of

dental surgery or master of dental surgery, or shall append the letters B. D. S., D. D. S., M. D. S. to his name, not having had duly conferred upon him by diploma from some college, school or board of examiners legally empowered to confer the same, the right to assume said titles; or shall assume any title or append any letters to his name with the intend to represent falsely that he has received a medical or dental degree or license.

(*c*) Any person who in any affidavit or examination required of an applicant for examination, license or registration under the laws regulating the practice of dentistry shall make willfully a false statement in a material regard shall be guilty of perjury, and punishable upon conviction thereof by imprisonment not exceeding ten years.

(*d*) All fines, penalties or forfeitures imposed or collected for violations of the foregoing provisions relating to dental practice and the corresponding sections of the penal code must be paid to the State Dental Society. Said society may prefer a complaint for violation of the law regulating the practice of dentistry before any court, tribunal or magistrate having jurisdiction, and may, by its officers, counsel and agents aid in presenting the law and facts before such court, tribunal or magistrate in any proceedings taken.

§ 2. Laws repealed.—Of the laws enumerated in the schedule hereto annexed, that portion specified in the last column is repealed, but it is expressly provided that any license or registration duly obtained in this State prior to the first day of August, eighteen hundred and ninety-five, without fraud and in full compliance with provisions of the laws in force at the time of its procurement shall not be affected by the repeal of those laws, but shall continue to be as valid as it was at the time of its procurement.

§ 3. This act shall take effect upon and after the first day of August, eighteen hundred and ninety-five.

SCHEDULE OF LAWS REPEALED.

Laws of—	Chapter.	Sections.
1868	152	All of section seven after and including the words "whose duty it shall be," and all of sections eight, nine and ten.
1876	331	All.
1879	540	All.
1881	376	All.
1889	337	All.
1892	528	All.

THE DENTAL PRACTITIONER

AND ADVERTISER.

DR. W. C. BARRETT, ... EDITOR.

BUFFALO, N. Y., JULY, 1895.

THE NEW YORK STATE DENTAL LAW.

We publish in this number the full text of the dental bill passed by the Legislature of the State of New York last winter, which goes into effect August 1st prox. There are many radical changes, and there is much of misunderstanding as to some of the provisions of the act, and therefore we propose to state the principal points in as clear a manner as possible. The absurd legal phraseology employed, the involved and complicated expressions in which every such document is clothed, too often render them obscure and incomprehensible to those most concerned, and make necessary an exegetical commentary.

The history of dental legislation in the State of New York covers a period of nearly thirty years. The first law passed was amongst the earliest of dental enactments, and did little more than to organize a State Society and prescribe who should be considered a qualified dentist, without in any way interfering with dental practice. The first amendment, passed two years subsequently, authorized the State Society, after due examination by its State Examining Board, to confer a special degree—that of Master of Dental Surgery. Soon after, irregular practice was forbidden by another amendment, but no penalties were provided. Since then there has been an almost constant tinkering with the law, until now the statute is as exclusive as the most ultra soul could wish.

A proper comprehension of the law of 1895 demands some acquaintance with the Board of Regents of the University of the State of New York, and their powers and duties. The university is not what is usually understood by the term. It is not a teaching body at all, nor has it any special local habitation or abiding place. It is simply a federation of the educational institutions of the State above the grade of the common school. The authority of the university is derived from the Legislature, and is supervisory and administrative. The conduct of its affairs is placed with a Board of nineteen Regents, who are elected by the Legislature in joint session, in precisely the same manner as are United States Senators, and who serve for life without pay and without any emoluments of office.

This body has been in existence for one hundred and eleven years, but until within a short time its functions were limited. Now, however, all professional schools are being brought under its jurisdiction, and the Regents prescribe what shall be the curriculum and what the requirements for matriculation. They may grant and annul charters, and may confer any degrees. The members of the Board are carefully removed from political influences, and hold no other offices. The professions of law and medicine are now completely under their direction, as far as educational matters go, and they are bringing into line dentistry, pharmacy, veterinary medicine, and all other professional educational matters.

The late dental law was enacted at the instance of the Regents, and is based upon the theory that dentistry is a part of medicine. The requirements are almost precisely the same, and the law is closely modeled after that which governs medicine. All the dental colleges of the State are placed under the direction of the Regents, and that body alone licenses to practice, as in medicine. The preliminary requirements for matriculation are precisely the same as those demanded of medical students, and the examinations for practice are conducted in the same way, and at the same time and place.

To comprehend the standard of requirements demanded of the medical or dental student before matriculation in a college, some knowledge of the "Regents' examination" is necessary. Four times a year, in every place in the State in which there is a school that belongs to the federation of the university, there are held these examinations, conducted under definite fixed rules by an agent appointed by the Regents. To these examinations anyone may be admitted without expense. The various studies are grouped together into "language and literature," "mathematics," "physical science," "history," "social science," etc., etc. In each of the studies in these various groups questions are prepared by the examination department of the State University, and these are, under proper restrictions, transmitted to the agent who conducts the examinations, and given out to those who come up for the trial, including pupils in all the common schools, as well as others, and written answers or papers are demanded. These are transmitted to the examination department, and properly marked and rated. For every study successfully passed a "Regents' pass card" is returned to the candidate, and this "counts" a definite number, according to the arbitrary marking of the study. When the group is completed, a "Regents' certificate" of ten, twenty, thirty, fifty or more "counts," is issued. These certificates and pass cards form the educational standard by which all are judged. A certain number of them entitles one to matriculation in a high school, or a college, or a professional institution. All pupils of the common schools who reach a certain grade are expected to take the Regents' examination, and the public moneys to academies and high schools are apportioned under them.

So much explanation to residents of other States is necessary to the comprehension of the educational status of New York.

The first section of the new dental law provides that only duly licensed persons shall be permitted to practice dentistry.

The next section prescribes who shall be licensed, and how this shall be done. The present Board of Censors of the Dental Society of the State of New York, will at the time when the law goes into effect, (Aug. 1, 1895), become the Board of State Dental Examiners. The section further prescribes that the members shall hereafter be appointed by the Regents upon nomination by the State Dental Society.

Section 162 regulates the examinations. The questions are to be prepared by the examining board, and submitted to candidates by an agent appointed by the Regents, and they will be held simultaneously with the medical examinations, in New York, Albany, Syracuse and Buffalo. The answers are to be submitted to the Examining Board for marking and rating, and that board will report the result to the Regents, who will issue to the successful ones a license to practice. Hereafter there will be no qualification for practice in this State, save the license of the Regents. All graduates, no matter from what school, must submit to this examination.

The most rigid portions of the law are those which prescribe who shall be permitted to take these examinations. With certain very restricted exceptions, these are confined to the graduates of institutions which demand as a preliminary to matriculation, after the year 1896, a Regents' certificate of fifty counts, or the evidence of a full high-school course in an institution registered by the Regents as maintaining a proper standard. It is provided that no dental school in this State shall graduate a student without such Regents' certificate, and no graduates of a college outside the State which does not demand the same, or a full equivalent, preliminary to matriculation, will be permitted even to come up for examination for practice. The candidates must file this certificate in advance of examination, or otherwise satisfy the Regents that he has the necessary qualifications.

Graduates of a registered medical school may be permitted to come up for examination after one year's study in a properly registered dental school. This does not necessarily include a dental degree.

Every person practicing dentistry in this State, must register with the County Clerk of the county in which he proposes to locate, and this registration can only be accomplished upon presentation of his license to practice.

A license to practice may be suspended or revoked by the Regents, upon recommendation of the Board of Examiners, after proof that its holder has been guilty of unprofessional or immoral conduct, or of gross ignorance or inefficiency in his profession.

The penalties for illegal practice are a fine of not less than $50 for the first offense, and not less than $100, or by fine and imprisonment for not less than two months, for subsequent offenses.

Heavier penalties are prescribed for bartering or selling, or offering to do so, any diploma or certificate purporting to confer any degree or qualification for practice;

Or for using or attempting to use any diploma, transcript or certificate that has been purchased, fraudulently issued, counterfeited or materially altered, either as a license or color of license to practice dentistry, or in order to procure registration as a dentist;

Or for falsely assuming any degree in dentistry, or appending any letters implying such false assumptions;

Or for practicing under an assumed name, or materally altering any diploma or certificate with fraudulent intent.

It is forbidden to practice under cover of the name of a qualified practitioner, or to perform any dental operation whatever, without registration, except that mechanical assistants may work upon inert matter, and students may perform operations in the immediate presence and under the direct supervision of their master or preceptor.

The members of the Dental Examining Board are authorized to administer an oath in determining the qualification of an applicant for license.

These are the main provisions of the law, stripped of its verbiage and repetitions. It will be seen that it makes some radical changes in dental practice in this State, and naturally affects colleges outside the State, whose preliminary qualifications for matriculation are not up to the New York standard. The Deans of colleges no longer have any authority in the acceptance of students, and the rule cannot be varied or modified. The new regulation will materially raise the standard in this State, and after two years a full high-school course must be insisted upon. This, of course, would drive a great proportion of students out of the State, were it not applicable to the graduates of all schools alike. As it is, a few years hence there will be no illiterate dentists in the State of New York, and it is sincerely to be desired that schools in other States will adopt the same standard. If the National Association of College Faculties will make its equivalent obligatory upon all its members, we shall soon have an educated profession everywhere, and dentistry will have gained wonderfully in dignity and effectiveness. If it does not, the State of New York will be closed to the graduates of a great number of our schools.

There are some provisions in the law that are of doubtful utility, and in a future number we propose thoroughly to canvass them.

MASTICATION AND MASTICATORY FORCES.

It is passing strange that among the thousands of dental mechanicians who delight in styling themselves scientific men, there has never until very lately been one to institute a series of experiments conducted for the purpose of determining the force necessary to the proper performance of the function which it is their special province to assist. Dentists have long worked upon the teeth, have repaired, and regulated, and corrected, and patched, and restored, and substituted them, and all without a comprehension of what their work was required to undergo. They have mended without knowing what it was that produced the original rupture, and without perception of what their tinkering must withstand. They have ministered to mastication in ignorance of what it was mechanically, and have studied everything save the basal principle upon which scientific mechanics must rest. They know all about the muscles that are used in the special function which they investigate, they have numbered their fibers and determined their origins and attachments, but there is almost perfect nescience concerning the force employed in the exercise of that function.

Well, well; this is not very creditable to us as a body of "scientific" men. But the schoolmaster is abroad in the land, and the proper spirit of inquiry is awakened. We may hope within a brief period to become a little versed in that which we should have known long ago, for who would have believed that until within a short time no one could form an intelligent estimate of how many pounds of force were exerted in chewing beefsteak or gum. Two years ago, at the Columbian Congress, were presented two estimates upon the subject, which were chiefly remarkable for the diversity of results obtained. This is not, however, to be wondered at, because of the difficulties to be surmounted in reaching exactness.

In the June number of the *Dental Cosmos*, Dr. G. V. Black, of Illinois, has a paper which gives the results of a series of experiments and observations conducted by him, that must attract the attention of the dental world. In the first place, the interest connected with the subject is intense, while the writer is peculiarly fitted for the task he has set himself. He has a mechanical turn of mind, is a tireless investigator, is scientifically educated and trained, and last, but not least, has the inventive genius to devise the apparatus necessary for the solution of the problem. Comparatively few are aware that he was a pioneer in the invention of the dental engine. "Black's Helper" was about the first one that we ever used, and it was more efficient than some of its successors which supplanted it. But to arrive at any specific, definitely positive conclusion in this matter, will try even his practiced faculties.

Some of the deductions in the second of his series of articles are surprising, and challenge thought. There is an uncertain element which he seems not to have taken into account, especially when he speaks of the strength or resistive force of the teeth, and that is the force of vitality, which is never constant. Perhaps it is because of this variability, this ever changing influence that precludes the possibility of positively estimating it, that he has left it out of his calculation, and yet it is one of the most important factors. There are other criticisms that might be made—it is so much easier to cavil than it is to originate—but Dr. Black is investigating a field, some parts of which are " terra incognita," and it behooves us all to have a care lest we stumble more than will our leader who is exploring ahead of us. It will not do to speak too confidently upon the convincing nature of his experiments until we see whither they are to lead.

Already Dr. Black has brought from the mine several nuggets that must prove of great value, while there is a vast amount of unreduced ore in sight. Granted that his instruments are not perfect, and do not work smoothly, (a fact of which he himself informs us), and that the results may not be exactly expressed to the fraction of a pound, yet there are comparative tables that are definite. We knew that there is a great diversity in the muscularity of individuals, but were we prepared for the divergence in the masticatory muscles? One stalwart man, six feet in height, chews with a force of 210 pounds, while another of yet better proportions, taller and of near the same weight, can close his jaws with a force of but 145 pounds. A child of four years, and forty pounds weight, exercises a biting power of forty-five pounds, while a school girl of eighteen, weighing 110 pounds, can show but fifty. A dentist weighing 165 exercises a force of 240 pounds, while an athlete who tips the scales at 230 can only bite 160 pounds. Here are variations that are not explained by average muscular development, and which indicate a missing factor somewhere.

The facts determined concerning the stress necessary for the crushing of certain foods, are very interesting also. They are a little indefinite, and make us long for a careful estimate of some elements that are omitted, but that is because our appetite is but whetted by that which is given us. The form of the teeth seems to exercise a great influence upon their crushing power. Their size is an important factor, and the very manner of their occlusion greatly affects their energy. The preliminary preparation of the food also materially modifies the results, while the character of the food itself actually qualifies the movements of the masticatory apparatus, and determines how the force shall be applied.

In chewing animal food, for instance, the jaws move directly up and down, and experiments in the artificial mastication of the same material show that this method of the application of the force of the muscles not only does the work more easily, but accomplishes it more perfectly. In the chewing of vegetable foods, on the other hand, the lateral motion is greatly relied upon as the easiest and best. This is singularly corroborative of the efficiency of the masticatory organs of the carnivora and the graminivora, the condyles and glenoid cavities of these orders being so shaped as to give to the first no lateral motion, while the latter has great excursive ability.

We all know that there is a great difference in the fiber of beefsteak, but Dr. Black's apparatus shows that to crush different specimens the force exerted ranges from thirty-five to ninety pounds, while bread-crusts, not very hard, are not crushed by a direct force of 250 pounds until some lateral motion is added. But the lessons to be learned from the experiments are almost numberless, and further developments will be anxiously looked for. It is by no means certain, as we said before, that these results will not be materially modified by further and more comprehensive experimentation, but even if this should be the case, Dr. Black will have marked out the way, and others may possibly improve upon the matter by using him as a guide,

DENTAL ENACTMENTS.

Everyone who has had anything to do with dental legislation, must be impressed with the great unanimity among practitioners regarding the duty of some other man's making the necessary complaint. It reminds one of Swift's definition of a charitable spirit: "A no sooner sees B in distress, than he petitions C to relieve him." Those who have never paid a dollar or given a moment's time to the procurement or support of dental legislation, are most anxious for the repression of irregular practitioners, and loudest in their complaints of unlicensed competitors. They write importunate letters to those who have for many years devoted themselves to dental reform, and always with the charge that their names are not to be used. They will not sign a formal complaint, or assist in obtaining testimony against an illegal practitioner, demanding that those who have armed them with weapons for their own protection shall also fight their battles. It is very seldom the case that the dentists who have labored to establish a reputable profession, and to prevent the intrusion of unqualified men, can in any way personally profit by their labors, except indirectly. Their status is usually secure, and they have nothing personally to fear from illegal or unqualified competitors. Their work is for their profession, and their labors are unselfish. But so accustomed are others to rely upon their generosity, that unless they at once drop their own business to harry some interloper, they are roundly abused for declining to be at the beck and call of those who would use them to compass their own ends.

There can be no advance made without the co-operation of all. If it is desirable to draw the lines between legal and illegal practitioners, and to repress those who are unqualified for practice, there must be the active support and sympathy of every man who regards his profession. There must be a general determination on the part of all qualified dentists to enforce the law, and complaints should be made against every one who practices illegally. The inspiration for this should come, not from any personal jealousy or sentiment of rivalry, but from a genuine love for and desire to advance the best interests of the profession. If those who are to be benefited by legislation give it but a half-support, public sentiment is influenced and the law cannot be enforced. It is the bounden duty of every professional man to assist in upholding the law, not only in his own neighborhood, but everywhere. He should strengthen the hands of those who are charged with the enforcement of the enactments, not alone by monetary contributions, for there are few who will give a dollar, but by words and acts. Unless there is unanimity among dentists, the public sentiment upon which all must depend for the support of the law will certainly condemn it.

At the late meeting of the New York State Dental Society, there were some singular manifestations of professional jealousies and resentments. There were those who, to score a point against someone whom they disliked, or with whose methods they were not in harmony, would have sacrificed the very law itself, beneficent as they admitted its main provisions to be. A paragraph was inserted which allowed the Regents to annul a license upon proof of grossly immoral or unprofessional conduct. Immediately a howl of disapproval went up from quarters where it was least anticipated. It was urged that even if a dentist were convicted of an infamous crime and sentenced to prison, it was wrong to take from him his registration or license, but he should be continued as a member of an honorable profession which he had disgraced, and whose recognition he had forfeited. If this must be the case, dentistry cannot maintain its respectability. No body of men can keep the good opinion of others if it harbors and shields criminals, and willfully throws the mantle of its protection around known villains and imposters. Law promptly disbars those who do not abide by its code of ethics, and who practice unworthily, or who are proved unqualified. Theology expels the minister who is convicted of immorality, or who preaches a doctrine that is not approved by his associated professional brethren. Medicine is equally strict in drawing reputable professional lines, and yet dentists scout the idea of incorporating a provision that in the very nature of things must exercise a moral restraint only. There is not one who does not know that any attempt to enforce upon community our professional regulations, and to oppress those who do not practice according to mere ethical agreements, would be fatal to a law.

In England the chief complaint of their law is that when a name is once upon the registry it is almost impossible to have it erased, no matter how unqualified or irregular or immoral the man may be. The same is urged in some of our States. There was an honest endeavor to free New York from this reproach, but those who would profit by it seem determined to spite themselves. It is idle to urge that such a provision could be used as a means of oppression, because every intelligent member of a dental society knows that it would be impossible to enforce a law that could be used for persecution. It is only the most flagrant acts of illegal practice that the law committee dare attack. There is not a statute enacted for the repression of crime against which the objections urged to the prejudice of the provision in question might not be brought. The binding force of this one must be moral and educational, and as such it might work a great deal of good for dentistry. Delegations from the advertising practitioners of New York, Buffalo, Albany and other places, were on hand to learn if such a section would be enforced against them, showing the moral effect that it must exert. When they were told that unless it could be proved that they were grossly and notoriously incompetent, and were immoral men, running their offices for improper purposes, the law would not affect them, they still complained that a kind of stigma would be placed upon their methods, which were commonly considered unprofessional. They were answered that this was just what was hoped from the law, and they were sorrowful. But when some of them attended the sessions of the State Society and heard some of the speeches made there, they were jubilant, and claimed that the State Society would sustain them in any event. They urged, and with considerable show of consistency, that the majority of the members of the State Society were in sympathy with advertising methods.

The moral of the whole matter is that the procurement of dental legislation cannot safely be left to a large body of men, because there is too great a diversity of opinion regarding details, and that a law must be so drawn as to educate the people, while its efficiency will chiefly depend upon its moral force. Every dentist who is loyal to his profession must merge his individual preferences in the best good of the whole. There must be no factional spirit, and the hands of the law committee must be upheld. It is impossible for them to consult with every one, or to accept the suggestions of all, for in that case no definite result would be possible, but all would end in anarchy and confusion. No dentist, no matter what his age, standing or official position, has the right to impose his personal views upon the committee, or to demand deference to his caprices. The matter must be left in the hands of those to whom it has been entrusted, and they must be judged by the results. Unless all can agree upon this, and drop factional feeling, the attempt to secure legislative action should be at once abandoned, for it can only result in evil to every one concerned.

THE FITTING OF CLASPS.

There is a prejudice against the use of metal or other clasps for retaining artificial dentures, because it is believed that they wear the teeth. It is not an infrequent occurrence to find a deep channel about a tooth that has been clasped, and both patient and dentist jump at the conclusion that it has been worn by the clasp. Careful observation will usually show, however, that the deepest erosion is where the clasp is not in direct contact with the tooth at all. Further, an accurate, closely fitting and narrow clasp will not cause as much erosion as one that touches only at certain points, while at others it stands away from the tooth, and which is wide and encroaches upon the gingival margin.

In most instances the channel under the clasp is the effect of chemical erosion, and not that of wear at all. Especially is this the case when the plate covers a considerable portion of the roof of the mouth, and is comparatively immovable. In such conditions there should be but little wear, while the erosion is usually greater than under unlike circumstances. But food readily lodges beneath the clasp, and if it is so constructed that it is retained there fermentation soon ensues, an acid is generated, and this dissolves away the tooth tissue. The more immovably the plate is held, the less will be the probability of the dislodgment of the food, and the greater the erosion.

The remedy is in the use of rather narrow, close fitting clasps, that do not extend above the palatal edge of the plate at the gum margin, thus forming a lodging place for food, and that are self-cleansing. Whenever practicable they should envelop the bulbous portion of the crown of the the clasped tooth, be raised above the plate and united at one or more points by a metallic standard, one end of which is soldered to the plate and the other to the clasp. At no point will such a clasp be in contact with the plate, nor will it be soldered directly to it. There will be a space between the two, interrupted only by the standard or standards, and the saliva will freely wash through this and keep the whole clear of food debris. Besides, the clasp attached in such a way will be much more effectual as a retainer, while it will be relatively stronger, because of the peculiar leverage.

A QUESTION OF PROPRIETY.

It is exceedingly provoking to read the reports of dental meetings in some of the daily newspapers. Smart Alecks, who are trying their prentice hands in the local columns, consider it exceedingly funny to call a congregation of grave professional men " tooth carpenters," and to speak of them as "jaw twisters" and "mouth breakers." All this may be excruciatingly witty, but it takes the fine sense of humor found only in the half-fledged police court reporter fully to appreciate the amusing points of it. After-dinner speakers love to refer in sportive mood to the "thrilling" qualities of the dentist, and to pass off as strictly original and unpremeditated cheap puns to which experienced dentists have listened ever since they attended their first professional dinner.

Last winter the Governor of a State, on an occasion as grave as that of the celebration of the fiftieth anniversary of the discovery of that priceless boon, anæsthesia, exhibited his smartness by undignified references to having kept his mouth open at the bidding of a dentist, and such like attempts at fustian wit. Those who listened to him were too well bred to notice his lack of taste and judgment, but we venture the assertion that there was not one present who did not wish for his own sake that his dentist had closed his mouth permanently. The old proverb has it that it is futile to attempt to make a silk purse out of a sow's ear, and it is probable that dentists must for some time to come be bored by these small-beer officials and would-be wits. Perhaps this may be but a small matter, but the continued irritation has produced a "raw" in the minds of more than one old attendant upon professional banquets. They feel that their dignity and that of the profession of which they are members is compromised by these vulgar exhibitions, and they sometimes cannot resist the impulse in a gentlemanly way to rebuke them.

A prominent city official was lately called upon to respond to a toast at a banquet given by dentists, and he got off the old gray-beard, time-honored puns. They were received in silence, and very soon afterward a dentist who was called upon to respond to another sentiment, in a grave manner and with apparent sincerity rebuked his brethren for their lack of veneration in not giving a fitting reception to time-honored jests, that were respectable for their antiquity if for nothing more. He said that they had listened to them so long that their repetition seemed like the voice of departed generations, and the least that should have been done was to receive them standing.

There was no more waste of cheap wit at the expense of the dentists on that occasion, and others than the offending official received a lesson that was needed. The dentists themselves were reminded that they had a personal and a professional dignity to defend, and that a decent sense of the proprieties demanded that they should exact, as they would show, the respect that is due to all self-respecting men.

As for the lampooning reports that are sometimes seen in the daily papers, probably we must continue to submit to them until a class of men with riper judgment and better manners fill the places of city editors, for it is useless to expect anything more elevated from the callow young men who are usually sent to report our meetings.

BIBLIOGRAPHICAL.

A GUIDE TO THE ASEPTIC TREATMENT OF WOUNDS. By Dr. C. Schimmelbusch; assistant in the Royal Surgical Clinic of the University of Berlin. Translated from the Second Revised German Edition, with express permission of the author, by Frank J. Thornbury, M. D.; lecturer on Bacteriology, University of Buffalo; supervising microscopist in the Bureau of Animal Industry, U. S. Department of Agriculture, etc., etc. With forty-three illustrations. New York. G. P. Putnam's Sons, 1895.

Strange as it may seem, while everyone recognizes the great importance of the subject, this is the only book on asepsis ever written. Nowhere else will be found the concise yet complete instructions for the treatment of wounds according to the most modern methods. Dr. Schimmelbusch has for years been the active assistant of Von Bergmann, in his surgical clinic in Berlin. The methods detailed are those of that master, and the publishing of the book meets his approval. He has, in fact, written the preface over his own name. Hence there can be no question as to the actual merits of the book from a surgical standpoint.

The first chapter deals with the importance of aseptic wound treatment. The greatest dangers of surgical interference have been banished. The abdomen and the cranium are now opened without hesitation, because the probabilities of infection are eliminated. Chapter two treats of air contact and infection, and the mistakes of Lister in his early methods of sterilization. Chapter three speaks of the germs of wound infection and their most frequent sources. Chapter four and the subsequent chapters deal with the means of disinfection, not only of the body, but of the instruments, the dressing materials, the sutures and ligatures, sponges, absorbent pledgets, etc., etc.

Dr. Thornbury, the translator, is admirably adapted to the task which he set himself, not only by his acquaintance with the literature of his profession, and his linguistic accomplishments, but from the fact that he spent a long time in the Bergmann clinic himself, and has a personal knowledge of the subject matter of the book. His work seems to be excellently done. He has added a number of American notes, and seven illustrations, the better to adapt it to the needs of the American reader. There is also a bibliographical addenda of sixteen pages that is unusually complete and full.

Altogether, this handbook of 230 pages forms one of the most important additions to our knowledge of pathogenic bacteria that has been lately published. It is full of useful suggestions and directions for the treatment of wounds, and the excellent translation of Dr. Thornbury should be as warmly received in this country as have been the original editions in Germany.

CURRENT NEWS AND EXCERPTS.

DR. ARNOLD C. HAWES.

Report of the committee appointed by the New York Odontological Society to prepare suitable resolutions upon the death of Dr. A. C. Hawes:

Your committee do respectfully report as follows:

On the 7th day of April last, Dr. Arnold C. Hawes, one of the earliest and most esteemed members of this Society entered into his final rest.

Soon after the formation of the Society he was elected an active member, and so continued until he retired from practice and took up his residence at his country seat in Connecticut. He then tendered his resignation and was made an honorary member.

Dr. Hawes was one of the founders of the First District Dental Society, its first Vice-President, and second President. He was one of the original members of the Dental Society of the State of New York, and for many years its Treasurer. He was among the first members of the American Dental Association, and for a time served as Treasurer of that organization.

Dr. Hawes was one of the most prominent and best respected members of our specialty; a man of sterling integrity, with generous impulses and candid manners. He was much interested in the work of our professional associations, and especially so in this, his favorite society. He was also an occasional contributor of articles for our dental journals.

Most of the gentlemen present will remember his ever genial, smiling face, and the warm grasp of his friendly hand. He was a model of good nature, winning the respect and love of all who knew him. You will perhaps also remember that for many months Dr. Hawes was almost totally blind, yet he bore his misfortune with a remarkable degree of cheerfulness; and when by a surgical operation his sight was partly restored, his joy and gratitude seemed unbounded.

In view of the departure of our late friend and fellow member, it is fitting that we record our high appreciation of his excellent character as a gentleman and professional worker. Therefore, be it

Resolved, That while we mourn the loss of one who for so long a time was our intimate associate, and who by his cheerful spirit and kindly disposition endeared himself to his friends and fellow members, we are devoutly thankful that it was our privilege to enjoy his genial companionship, and to have been classed among his friends. In our affectionate remembrance comes also the cheering thought that he led a good and useful life, and earned an honorable record.

CHARLES E. FRANCIS,
C. A. WOODWARD,
ALBERT H. BROCKWAY. } *Committee.*

GOLD SOLDER.—Dr. J. A. Robinson recommends that as an alloy, equal parts by weight of copper, silver and zinc be taken. The copper and silver should first be melted in a crucible, and the zinc should be added in small pieces. When thoroughly mixed, this alloy should be poured into an ingot. Then of the gold plate that is being used three parts should be taken to one of the alloy. This would appear to reduce it lower than is necessary, as pure gold would be reduced to eighteen carats, while twenty-carat plates would have but fifteen-carat solder if it is prepared from this formula. If the proportions used are four of gold to one of alloy, the solder will be nearer the desired standard.

OUR COLLEGES.

The following table gives the total number of matriculates for the year and the graduates at the late commencements of the following colleges:

Birmingham Dental College,	Matriculates,	24	Graduates,	1
University of California,	"	...	"	38
Columbia University,	"	64	"	15
National University,	"	36	"	9
Howard University,	"	11	"	0
Southern Medical College, Dental Department,	"	...	"	...
Chicago College of Dental Surgery,	"	416	"	107
American College of Dental Surgery	"	331	"	66
Columbian Dental College,	"	...	"	...
Northwestern University, Dental School,	"	118	"	30
Indiana Dental College,	"	126	"	27
University of Iowa,	"	150	"	25
Louisville College of Dentistry,	"	129	"	26
University of Maryland,	"	180	"	45
Baltimore College of Dental Surgery,	"	166	"	45
Harvard University, Dental School,	"	...	"	...
Boston Dental College,	"	...	"	...
University of Michigan, Dental Department,	"	184	"	47
Detroit College of Medicine, Dental Department,	"	54	"	18
University of Minnesota,	"	70	"	12
Missouri Dental College,	"	86	"	24
Kansas City Dental College,	"	153	"	39
Western Dental College,	"	163	"	30
University of Buffalo,	"	160	"	30
New York College of Dentistry,	"	364	"	82
Ohio College of Dental Surgery,	"	189	"	50
Western Reserve University,	"	53	"	17
Cleveland University,	"	27	"	5
Cincinnati College of Dental Surgery,	"	26	"	5
Ohio Medical University,	"	54	"	8
University of Pennsylvania,	"	278	"	70
Pennsylvania College of Dental Surgery,	"	309	"	83
Philadelphia Dental College,	"	367	"	115
University of Tennessee,	"	58	"	15
Vanderbilt University,	"	...	"	38
Royal College of Dental Surgeons, Ontario,	"	135	"	41
Dental College of Province of Quebec	"	25	"	11
Meharry Dental Department,	"	10	"	2

ANOTHER SOURCE OF FRAUDULENT DIPLOMAS.

One method through which unqualified men have been able to practice medicine, and in some cases dentistry, has been as follows: A genuine diploma was obtained that had been issued regularly, and whose original holder had perhaps died. The name was erased by means of chemicals, and another substituted. Or perhaps some traveling quack masqueraded under the name of the original graduate. Then when the qualifications of the peripatetic practitioner were challenged, he produced this diploma, and it was almost certain to pass muster.

Not long since John R. Mullen, of Alexander, Genesee County, N. Y., advertised for sale a diploma that belonged to his late father, and which was issued by the Castleton Medical College, of Vermont. The matter was referred to the Board of Regents of the University of the State of New York, and they have commenced proceedings against Mullen for infraction of the law, which makes such a thing a misdemeanor. During the investigation it has been discovered that there had existed a regular traffic in such diplomas.

NEW JERSEY STATE DENTAL SOCIETY.

The twenty-fifth annual meeting (the silver anniversary) of the New Jersey State Dental Society will be held in the "Auditorium," Asbury Park, N. J., commencing Thursday, August 1st, at 10 A. M., and continuing through Friday, Saturday and Monday A. M., closing in time for the meeting of the American Dental Association, commencing Tuesday, August 6th, at 10 A. M.

The "Auditorium" is the ideal place for a summer dental meeting, being situated in the middle of an entire block fronting the surf, with large windows opening from every side in one continuous row, thirty large windows with north light for clinics, and 390 x 25 feet for exhibits.

A branch of the Asbury Park postoffice will be established in the "Auditorium," and a bureau for general information, with attendants constantly on hand.

The New Jersey headquarters will be in the "Hotel Columbia," with rates from $2.50 to $3.00 per day. Several large hotels have made contracts from $2.50 to $4.00 per day, and smaller hotels from $8.00 to $12.00 per week board.

Full particulars and rates, with map of Asbury Park and plan of the "Auditorium," will appear in the program.

CHAS. A. MEEKER, D. D. S., *Secretary*,
29 Fulton St., Newark, N. J.

UNIVERSITY OF BUFFALO—DENTAL DEPARTMENT.

The third annual commencement exercises were held in connection with the Departments of Medicine and Pharmacy at Music Hall, in the City of Buffalo, on Tuesday, April 30th, 1895. After thorough examination by the Board of Curators, including the State Dental Examining Board, the Chancellor, upon their recommendation, conferred the degree of Doctor of Dental Surgery upon the following members of the senior class:

Will. B. Bartlett,
Charles Frederic Bunbury,
Gerald Griffin Burns,
Chas. Alexander Bradshaw,
Fred. Ellsworth Cloud,
Thomas James Dorland,
Charles Edwin Flagg,
Frederic Jacob Gieser,
William George Gowland,
Perry Charles Hammersmith,
Frank Lewis Haynes,
Albert Heinrich,
Lott Myron Howder,
George Lintner Hussong,
Harry Bestow Huver,
Lloyd Starr Ingalls,
William Erastus Jenney,
Clint Wood La Salle,
Charles Thomas Lewis,
John James Madden,
Henry James McLellan,
Alfred Edward Mimmack,
Bertram Amos Moyer,
Thomas Clarence Phillips,
Miss Annette Rankin,
Albert Boniface Rieger,
Frank Mills Rowland,
John Wesley Steele,
Harry George Tripp,
Burdette Washington Whipple

The whole number of matriculates for the session was 160.

CHAPIN A. HARRIS.—Perhaps modern dentistry is as much indebted to this man as to any other. He it was who founded the first dental college and established the first dental journal. Dentistry has honored the memory of Wells, and it is a matter for congratulation that steps are now being taken to raise a monument to the memory of one of the greatest names that adorns the pages of dental history. Dr. Harris was born in central New York, but his remains rest in Mount Olivet Cemetery, Baltimore. It is proposed to erect the monument over his grave, and also to place tablets in both of the Colleges of Baltimore. We do well to honor the memories of those who honored us in their lives, and there are doubtless many who will be glad to aid in this good work. Subscriptions may be sent to the Snowden & Cowman Dental Manufacturing Company, Baltimore, Md., and they will be thankfully acknowledged.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The annual meeting of this body will be held at Asbury Park, N. J., on Saturday, August 3d, at 10 o'clock, A. M. It is very desirable that all the colleges having membership be promptly present at that hour, as much important business will be before the Association, and the time allotted is usually short for the work to be done.

The Executive Committee of the Association will meet on Friday previous, at 10 o'clock, at the same place. All business for that Committee should, so far as possible, be in their hands before the meeting, in order that there may be no delay.

Louis Ottofy, *Secretary*,
Masonic Temple, Chicago.

DENTAL SOCIETY OF THE STATE OF NEW YORK.

At the meeting held May 8th and 9th, 1895, the following officers for the ensuing year were elected:

President,	Dr. H. J. Burkhart, Batavia.
Vice-President,	Dr. C. K. Van Vleck, Hudson.
Secretary,	Dr. C. S. Butler, Buffalo.
Treasurer,	Dr. J. I. Hart, New York.
Correspondent,	Dr. R. Ottolengui, New York.

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The annual meeting will be held in the parlors of the "Hotel Columbia," Asbury Park, N. J., on Monday, August 5th, 10 A. M., and at such other times during the week as become necessary, between the sessions of the American Dental Association. It is important that every State board be represented. Applications from boards not in membership will receive immediate attention.

Chas. A. Meeker, D. D. S., *Secretary*,
29 Fulton St., Newark, N. J.

Harlaquinesque—" Barettesque. 'Medicine is 700 years old and has but one degree.' Now we read M. R. C. S., F. R. C. S., L. R. C. S., L. R. C. P., M. B., C. M., F. S. A., Officier de Santè, and a few others, all degrees in medicine."—*Dental Review*.

Oh, no; these are not degrees in medicine. M. R. C. S. is Member of the Royal College of Surgeons; F. R. C. S., and L. R. C. S., are respectively Fellow and Licentiate of the same body; L. R. C. P., is Licentiate of the Royal College of Physicians; M. B., is Bachelor of Medicine, a distinction in the undergraduate course, the termination of which is the M. D. C. M. is Master of Surgery, a title given for two years' hospital work. These are not regular medical college degrees, but English memberships and distinctions. The F. S. A. is too much for us. There is a B. S. A., Bachelor of Scientific Agriculture, and an M. S. A., Mistress of Science and Arts, but we do not know the F. S. A. Officier de Santè is the French title for Health Officer. "When you wish to be accurate, be accurate."

A Correction.—Dr. C. S. Case complains, with justice, perhaps, that an editorial in the last number mis-stated the ground which he took in a paper read before the Chicago Dental Society. There was no desire to do him an injustice. The editorial was printed before his article was published. An abstract of the latter had appeared in another journal, and that was taken as a text for certain remarks which the editor of this journal desired to make. The error was primarily with the journal which misconceived the article in making its abstract, and which misled this journal, both errors being unintentional.

PREDISPOSING CAUSES.—The leading article in this number deals with a very important subject, and one to which the attention of dentists should more frequently be called. Too often the exciting cause of pathological conditions would be powerless, were it not for a depraved constitutional state which weakens the defenses that otherwise might prove a safeguard. Who has not seen a dentition that was comparatively perfect suddenly attacked by caries at all points, the result of some constitutional disturbance? Not infrequently this is at the close of some exhausting sickness. Or it may be the only indication of some crisis which the patient narrowly escaped, and which, save for this sign, might never have been known. It is a matter that all might study with profit. The article referred to has been in hand for some time, but could not be reached until this number.

EARNED BY FAITHFUL WORK.—Fred. J. Gieser, John J. Madden, Lloyd S. Ingalls, Charles E. Flagg and Fred. E. Cloud, members of the graduating class of the Dental Department of the University of Buffalo, by earnest diligence and good deportment during the last term gained places upon the "Honor Roll." All of them have been appointed to positions in the Faculty, and it has been determined that, as far as is practicable, in the future all who attain to certain standing in the "Honor Roll" will be advanced to honorary positions for one year in the college. The Faculty believes in honoring those who honor the school.

RE-SWAGING OF OLD PLATES.—Sometimes this may be accomplished without removal of the teeth by filling a casting ring with putty that is moderately stiff. The plate is then put in position upon the male die and sunk in the putty until it rests firmly, when the whole is placed upon the swage-block and swaged with a not-too-heavy hammer. If care be used, the teeth need not be broken, but of course the parts of the plate covering the alveolar ridge will not be newly swaged, because they will be held rigid by the tooth attachments.

A NEW WORK ON OPERATIVE DENTISTRY.—Dr. E. C. Kirk, editor of the *Dental Cosmos*, has in preparation a new work on operative dentistry. He is aided by a corps of some of the best writers in the profession, who will prepare the different chapters somewhat after the manner of "The American System of Dentistry," but with more of unity of purpose, in the hope of better systematization. Such a work is sadly needed, and there are few more competent for the task than Dr. Kirk.

ALL HAIL!—Prof. Truman W. Brophy, Dean of the Chicago College of Dental Surgery, has received from Lake Forest University the honorary degree of Doctor of Laws. This is a distinction well bestowed. All worthy dentists will unite in congratulating the recipient, for dentistry itself is honored in the person of one of its most honored practitioners. Prof. Brophy is the first dentist to receive the LL. D., and but comparatively few medical men have thus been honored.

AMERICAN DENTAL ASSOCIATION.—This Society will hold its meeting at Asbury Park, N. J., commencing Tuesday, August 6, 1895. Each State and local society that has adopted substantially the same code of ethics as that governing the conduct of members of the American Dental Association, is entitled to one representative for every five members and fractional part thereof.

EMMA EAMES CHASE, *Corresponding Secretary.*

ANOTHER DEPARTMENT.—The University of Buffalo has added another department to those already organized, and a School of Pedagogy will open its doors with the beginning of the fall term. Teaching is a science of itself, and those who engage in it as an avocation should become acquainted with all the best methods. The new department of the University will be devoted to the art of teaching as a profession.

THE FORMATION OF UREA.—M. Kaufmann has been engaged in making a series of observations and experiments to determine the point at which the formation of urea commences. His conclusion is that wherever there is waste of tissue there urea is formed, it not being located in the liver. But at no point is there so great a formation as in that organ, it seeming most active.

ELECTROZONE—"When you wish to disinfect a barrel of swill you don't pour carbolic acid into it—Sternberg is good enough for us."—*Dental Review.*

Why should our friend pour Surgeon-General Sternberg into a barrel of swill? And what shall disinfect a good professional journal when that has been made the medium for editorial swill?

PLASTER IMPRESSIONS.—In difficult cases, before the addition of the plaster to the water, add some finely cut fibers of absorbent cotton. A small quantity will give body to the plaster in the event of breaking, and the fragments will not separate entirely, but may be readily replaced, as they will hang together.—*Odontologie.*

FOR SENSITIVE DENTINE.—Dr. C. E. Francis, in preparing sensitive teeth for filling, uses a solution of bi-carbonate of soda in electrozone. He saturates the cavity with this and then proceeds to excavate, renewing the application whenever necessary, and finds that it modifies the pain to a considerable extent.

AMERICAN DENTAL SOCIETY OF EUROPE.—This body will hold its twentieth annual session at Boulogne-sur-Mer, France, August 5th, 6th, and 7th, 1895. All professional brethren are cordially invited to attend.

DR. J. A. SPAULDING, *Secretary,*
4 Rue de Rome, Paris.

THE ENGLISH DENTAL REGISTER.—The medical profession of Great Britain has now admitted to the Dental Register 4,874 names, besides 27 "foreign dentists" who are registered. The percentage of registered dentists is now 27.82. In 1894, it was 26.48, and in 1893, 25.43.

NOT THE FAULT OF THE WRITER.—The article upon German students and German teaching should have appeared in the last number of this journal, but unfortunately it was mislaid. That is why two articles by the same author appear now.

RUBBER DAM CLAMPS.—To adjust the rubber dam clamp painlessly, slip over its jaws small pieces of rubber tubing. It will also aid in making a water-tight filling around the tooth.—*Dominion Dental Journal.*

THE DRUG TRADE.—It is estimated that there are more than 300,000 persons in this country engaged in the selling of drugs. Over $100,000,000 are invested in the manufacture of drugs and chemicals.

THE DENTAL PRACTITIONER
AND ADVERTISER.

DR. W. C. BARRETT, ... EDITOR.

BUFFALO, N. Y., APRIL, 1895.

EARLY OPERATIONS FOR THE CLOSURE OF CLEFT PALATES.

A paper was lately read before the Chicago Dental Society, upon "The Evils of Early Operation in Cleft Palate Cases," by Dr. C. S. Case, than whom no one has made greater advancement in the manufacture of artificial appliances for its amelioration. In the paper and the discussion which followed, the line was clearly drawn between mechanical and surgical procedure. Naturally, Dr. Case, because of the success which he has met with in corrective measures later in life, believes in the inutility of surgical procedures, and so expressed himself. The paper was an excellent résumé from the standpoint of its author, but we cannot but think that there is much to be said in favor of surgical measures. A serious operation upon a young child but a few days old seems formidable, and our sympathies are warmly excited at the very thought of subjecting the helpless little being to the knife of the operator. And yet there are potent reasons that lead to the belief that surgical procedures which do not involve great loss of blood cannot be instituted too soon after the functions of independent existence are once fairly established.

That which surgeons most fear as the consequence of operation is surgical shock. This is the vital depression following upon the receipt of the injury. It is, of course, due to the impression made upon the nervous system, and the emotions often play a very important part in it. Indeed, emotional shock is in many cases more dangerous than that from mere trauma, or wounds. Many a person has died immediately from emotional shock produced by a sudden depressing nervous impression, like the receipt of bad news. The consequences of surgical shock are greatly aggravated by the apprehensions of the patient. Anæsthesia delivers from the actual fear of pain, but it gives no immunity to dread of the ultimate consequences of the operation, and this haunting fear depresses the nervous tone, sends the patient to the operating table predisposed to after complications, and greatly enhances the subsequent nervous shock.

From all this the young infant is free. There is no dread, no apprehension, no sentiment whatever connected with the operation. There will be simply the traumatism from which it will suffer, and the emotions will play no part in the affair. Functional activity will be quite as great as in the case of an adult, while the vitality, other things being equal, will be as great in proportion to the necessary lesion. The tissues themselves are in a partially embryonic state, and the reparative process demanded for the healing of the wound is more in harmony with the functions of the body than it is later in life, when all the organs are completely developed. Hence the surgeon may hope for better results from operations upon young infants than for those made for adults, provided they are not so serious as to be beyond the vital forces of the child.

The advantages of early operations for cleft palate, in all cases in which operations are warranted at all, are very many. They may be successful in overcoming anatomical defects, when later in life they would be entirely useless. It is well known that the ordinary staphylloraphic operation after the patient has reached maturity is usually without good results, owing to the lack of tissue necessary completely to fill the cleft. The muscles which form the soft palate, from lack of use, have not developed with the rest of the body, but have atrophied, and the patient has at best the levator and tensor palati muscles of the infant, while the other organs are those of the adult. If the edges of the cleft are then approximated, they must of necessity put the undeveloped tissues upon a stretch, and draw them away from the posterior pharyngeal walls.

This is not the case when the operation is performed at a very early age, for there will then be a greater proportionate amount of tissue, and there will be less tension. The muscles will be brought into activity, and will commence to develop, and the condition after the child begins the attempt at speech will constantly improve. There is little doubt that there are many cases which, if operated upon at three days, might be successful, when if they are postponed for three months, they will be contraindicated.

There is another reason why early operations are desirable when they can be safely performed, and that is found in the fact that a cleft palate always prevents complete nourishment. The child cannot nurse, and must be artificially fed, and this tends to depress vitality, especially during the earliest periods of development. If the operation can be performed before the infant has lost some of the stock of vitality which it received from the mother during its intre-uterine life, it will be better prepared to resist the traumatic shock than it will be even a few weeks later. In a very short time after the operation it may begin to receive the benefits which it will bring to nutrition through the ability of the child to feed naturally. Of course, this presupposes that the infant comes into the world with a fair stock of strength and vitality, and this is usually the case in instances of cleft palates.

Then there is the great advantage which a successful early operation gives in enabling the child to commence its education properly. If it is obliged to wait until an obturator can be inserted, it is too late for correct speech ever to be completely restored. The muscles necessary to distinct enunciation will be forever lacking, and no mechanical appliance can completely supply their place. Bad habits of speech will have been ineradicably acquired, and the apparatus will at best be what a wooden leg is to the man who has lost the natural limb—something which he must use with a limp if he uses it at all.

The operation with which Prof. Brophy's name is indissolubly linked for all time, seems to present the best solution of the difficulties presented by a congenital cleft palate of anything yet offered in dentistry, for all cases to which it is adapted. It has been gravely urged as an objection to it that it cannot be employed in all instances of incomplete cleft. That is as valid as it would be to protest against the manufacture and sale of children's clothing because it is not suitable for adults. The Brophy operation for the radical closure of complete clefts of the hard palate, contemplates the reduction of the size of the arch by forcibly bringing the divided bones together, not by splitting, but by sutures passed through the whole maxilla, thus drawing the two halves together. All that is thus gained laterally may be used in extending the soft palate longitudinally, thus avoiding the necessity for any stretching when that in turn is sewed up. The tendinous portion of the tensor palati is not cut, and its function is preserved. But the success of the operation depends in a great measure upon its being performed early. Prof. Brophy has a record of a considerable number of complete successes, and what seems most strange, the reduction of the size of the upper arch is but temporary, for when development begins it proceeds until the arch has reached full normal size again, and when the teeth are erupted they occlude as naturally as if the arch had never been reduced. The writer of this has seen a number of cases which incontestibly establish this fact.

It would appear, then, that the line of advance should be in that of surgical procedures, and that it is from this that humanity has most to hope. Obturators and mechanical appliances will always be in demand, because the possibilities of surgery are from various causes limited. So too, there will always be a demand for artificial dentures, for those who have not had the advantage of the skill of the best dentists, but no one will dispute that the highest professional interests will be subserved, and the geatest good to humanity will be most completely gained, by extending the field of operative rather than that of prosthetic dentistry. So to surgical interference in cleft palate cases must the world look for the highest form of relief, and in this direction should inquiry be chiefly directed, and our professional advancement be made.

DEGREES IN DENTISTRY.

The multiplication of degrees in dentistry is a thing to be deprecated. Our aim should be thoroughly to establish one distinguishing degree, to make that the badge of the highest culture in dentistry, that the world may become familiar with it and learn to respect it. Medicine, with its seven hundred years of history as an organized profession, has but the one degree of M. D. Dentistry, which has but little over fifty years of separate existence, already has in this country four degrees, and there seems an anxiety on the part of some to establish a fifth. We are too fond of cheap distinctions, and this tends to make us ridiculous in the eyes of the world. True culture and erudition cannot be attained by legal enactments, and all the letters of the alphabet tagged to one's name will not signalize him among educated men, unless they really mean something.

Our distinguishing degree of D. D. S. was probably badly chosen, but having once been adopted every effort should be put forth constantly to raise its character. It would perhaps have been better had the D. M. D. been selected at the outset, but it was not, and when Harvard set at naught the precedents already established, and inaugurated another degree, it brought confusion instead of harmony, and by dividing the attention of the world cheapened both distinctions. Michigan has introduced another element of discord by instituting yet another degree, that of D. D. Sc. The M. D. S. of New York and Canada is not a college degree, and as originally conferred was intended to subserve a temporary purpose only. It has never been acknowledged, except locally, but it has tended to retard the thorough organization of dentistry, and has been another element of confusion. How can we expect the world to respect us when we do not sufficiently respect ourselves to sustain one distinguishing degree, and to uphold it in the face of all men? At present there is no special badge of professional attainments upon which we are all agreed, and which it is the aim of every dentist to make respectable.

Post-graduate degrees must inevitably tend to defeat the very ends which their advocates desire to bring about. It is urged that they will represent a higher culture, and stimulate to further attainments. But the course of study which it is proposed that they shall typify is not more complete than that which the D. D. S. should represent, and which in process of time will be required for that distinction, if we expend our efforts in raising it to the proper point. Instead, then, of elevating the standard, the post-graduate degree can exist only by depressing the D. D. S. just that much, and, therefore, it must lower the general educational tone. It can not rise above the professional level, and that point should be marked by the D. D. S. The latter is the regular professional distinction, and it bodes evil to dentistry when anything is done to debase its signification. Our colleges must of necessity set the pace for our educational advancement, and when they begin to bid for popular favor by instituting new titular decorations, it is an advance in the wrong direction. Rather should they emulate each other in raising the character of the degree which they were organized to confer, by requiring each year yet higher preliminary requirements before students will be allowed to enter upon a novitiate, and greater attainments before it shall finally be conferred.

If the D. D. S. as a distinguishing degree is not satisfactory to the profession, a convention of all those interested in educational matters should agree upon a new one, that should be made what the M. D. is in medicine, the only door through which entrance into dentistry can be gained. The mother profession has constantly set its face against the granting of any side degrees, and has steadily maintained the integrity of its one distinction, and as a consequence the doctorate is known and revered wherever medicine has an organized existence. It is the single portal which must be passed before a professional status can be gained. We have made four breaches in our low professional walls, and as a consequence there is no one standard which is accepted and acknowledged by all the world as the line of demarcation between the layman and the professional. We are overrun with a horde of uneducated men, who have gained easy access into our professional fold, and we have no common rule by which their exact status can be determined.

If we are ever to occupy the position in the eyes of the world which of right belongs to us, we should agree upon some single distinguishing badge, and then pledge ourselves that we will recognize only that. If any school sets up a separate standard, it should be ignored and forced into compliance with the rule which should be binding upon all alike. Any institution may raise the status of that degree, when the natural consequence will be that its diploma will be sought by those who desire the highest qualification, and its class of students will win distinction for their alma mater. If, after that, their graduates wish to make excursions in broader fields, and to conquer the whole domain of medical science, instead of instituting special degrees and establishing post-graduate courses, let them be encouraged to take the medical degree, which each year covers a more extended erudition, and embraces the very studies which must be included in a post-graduate dental course.

THE COAGULANT THEORY.

The propriety of the employment of coagulators of albumen in the treatment of pulpless teeth has been the chief subject of discussion in the dental journals and societies for the past few months. The disputants have been thus arrayed: Dr. A. W. Harlan against the field, the field against Dr. Harlan. The latter has for some years advocated the theory that cogulants are self-limiting in their action, and do not penetrate to any depth, as the coagulum which forms at the periphery effectually prevents deeper action, and hence the dentine of a pulpless tooth cannot be effectually sterilized when they are employed. It is a subject of absorbing interest to all practitioners, and every dentist of intelligence has followed the discussion closely, and is prepared to come to a decision that shall be final, if no further testimony can be adduced.

In the first place, it must be shown that there is coagulable matter within the dental tubuli of devitalized teeth. This has been assumed, but is it positively determined? After their separation from the dental pulp, certainly the fibrillæ cannot long retain their original character. They must coagulate spontaneously, and finally be melted down. What will then be the character of the contents of the dental tubuli? Will it be entirely albuminoid? That has not yet been shown, nor is any proof forthcoming that it is anything more than water, of course holding in solution more or less putrefactive matter. Hence the theory that coagulated albumen will stop the open mouths of the tubuli and prevent penetration of antiseptic agents, when coagulants are used, is not established, even though their non-diffusibility be granted.

But the truth of a pre-conceived theory cannot be allowed to rest upon mere generalization. It must be demonstrated by incontestible facts, by carefully and scientifically conducted experiments. Nor can mere clinical observations be accepted in lieu of these. It will not do for one to assert that he has observed in practice that such and such is the case. Neither are individual, separate, disconnected experiments .conclusive. There must be a series of them, so conducted as to eliminate all chance of error, sufficiently varied in form to cover every phase which may present, and enough in number to establish a sequence that shall be indisputable. All the data must be minutely detailed, that others may without chance of mistake go through them again, and either verify or disprove them.

In the *Dental Cosmos* for January, 1895, there is published such a connected series of experiments and observations, conducted by Dr. James Truman, who opposes the theory of Dr. Harlan, and photographs of the tubes containing albumen in various conditions are given, that there may be no dispute concerning the results obtained. They seem conclusively to demonstrate the incorrectness of the theories first advanced by Dr. G. V. Black, and so ably advocated by Dr. Harlan. Until a like series of carefully conducted and fully detailed experiments which point to an opposite conclusion are given to the world they must be accepted as final, and no amount of rhetoric or ingeniously constructed generalization will weigh an atom against them in the minds of scientifically intelligent men.

In the *Dental Cosmos* for March, 1895, there is published a paper read by Dr. Harlan before the First and Second District societies of New York, which is the last gun that has been fired. It contains much of ingenious reasoning, and the author remains fixed in his opinions, but he again offers only assertion and theory. He says he has conducted experiments to sustain his views, but he does not give the data, that they may be examined and their correctness tested. When one sets out with a theory he is so apt to be biased and to overlook possible errors, that his work must be scrutinized by others before it can be accepted. That opportunity Dr. Harlan has not given his opponents, while they have shown him every step in their work. Certainly, until he can point out their mistakes, if they have made them, it must stand against mere declamation.

It is somewhat strange that the most exhaustive series of observations yet made, conducted by one whom all the world will admit to be the most competent to test this matter, and pointing most decidedly to the results obtained years later by Prof. Truman, have been almost ignored. It cannot be that they are forgotten, and certainly no one has a right to plead ignorance of them. In the *Dental Cosmos* for August, 1890, Dr. W. D. Miller published an anticle, entitled "Experiments on the Comparative Values of Various Antiseptics in the Treatment of Diseased Teeth," giving all the details of a series of observations that were conclusive until disproved, and they were illustrated by plates that made the subject clear, even to the unscientific mind. The whole series consisted of *three hundred and ninety-three* experiments. Of course, they are not all detailed, because, as the author said, they would fill about fifty pages of the *Cosmos*, but enough are presented to show the methods employed, while a summary of the whole is given. The pulps of actual teeth were used under circumstances that excluded any probable error, and the results were substantially the same as those obtained by Prof. Truman and Dr. Kirk. They were as follows:

Agents pre-eminently active in preventing the decomposition of pulp tissues—

Bichloride of mercury, trichlorphenol, sulphate of copper, cyanide of mercury, carbolic acid, oil of cloves, chloride of zinc, campho-phenique, hydronaphthol.

Those of doubtful value—

Thymol, salycilic acid, eugenol, alpha and beta-naphthol, tartrate of alluminum, and some essential oils.

Those nearly or quite worthless—

Iodoform, borax, boracic acid, chloride of lime, per-oxide of hydrogen, sozoiodol salts, iodol, tincture of iodine, naphthaline, and many essential oils.

These were used upon pulp tissues, and not for the sterilization of dentine, but they show the relative penetrating powers of the different agents, and all the experiments conducted since then but serve as substantiating proofs of that which was already established, and in disproval of which no demonstrated facts have yet been adduced.

Another series of experiments of the same observer will be found detailed in the *Dental Cosmos* for May, 1891, in a paper "On the Comparative Rapidity with which different Antiseptics penetrate Decalcified Dentine; or, What Antiseptic should be used for Sterilizing Cavities before filling." This article contains the results of ***three hundred and fifty-four*** experiments, carefully conducted, the full details of all the steps taken being presented. The results established about the same general facts as the preceding series. The essential oils generally were found the least efficient of all the substances examined. The most efficacious were found to be bichloride of mercury, chloride of zinc, and carbolic acid, all coagulants.

The burthen of showing that all this mass of testimony is false must rest with Dr. Harlan, and until he is ready with his controverting demonstrations, we cannot escape the conclusion that the case is closed.

HYPNOTISM.

The editor of the *Western Dental Journal* evidently has little faith in the unfathomable. He expresses his opinion of the Minneapolis developments, which have been so widely advertised in the newspapers, as follows:

> "The country is being flooded with newspaper notices lauding Dean Sudduth, of the College of Dentistry, for his work in the hypnotic field in the clinics of that college. It seems too bad that such articles as have appeared in the *Minneapolis Tribune*, and relating to the hypnotic sleep in removing teeth, should again instruct the ignorant that apparently the business of the dentist is to extract teeth. Why cannot our Minneapolis friends keep out of the newspapers? We, of course, expect to find that Dean Sudduth 'didn't know it was loaded.'"

Hypnotism has existed in different forms from time immemorial, and among all people. It is a manifestation of the unbalanced nervous organization of neurotics. In ancient days it was denominated witchcraft, and

Saul of Israel sought out the hypnotist of Endor, and under her "control" imagined that he saw the prophet Samuel. Among the Puritan fathers and mothers this delusion was peculiarly rife, and they so feared the "control" and the "suggestions" of the evil one, that they could not rest easy in their beds until they had burned the most forlorn of the old women, who in all ages and of either sex have formed the majority of the hypnotists.

There is another allied manifestation of this same delusion of neurotics which has existed from the earliest ages, and which in these latter days is called faith cure, the laying on of hands, Christian scientism, and other fanciful names. During our own not very long life we have seen this craze take on a number of different phases and forms, run a brief course, and fall into oblivion, only to bob up again serenely under a new name when a little forgotten, and when another credulous dupe or unbalanced enthusiast again galvanized it into seeming life. We first had personal knowledge of it as mesmerism, and wonderful stories were related of its marvels. Then it was called animal magnetism. Later it was denominated psychology. Then it became spiritualism, and clairvoyance, and finally it turns up as hypnotism. It is closely allied to somnambulism and catalepsy, while hysteria in some of its forms is its constant attendant. Each of these manifestations reach their highest development in the neurotic, and the whole seems a part of the phenomena that accompany disordered nervous function. As such, hypnotism becomes properly the study of the alientist and the specialist in medicine, but only as a singular form of mental disease. When the merely curious experimenter begins to play with it, unless under the direction of a skilled neurologist, he is treading upon dangerous ground, and he hazards the well being of both himself and his victim. Perhaps he may be excused for imperiling his own safety, but he is guilty of an outrage when he subjects another credulous person to his dangerous experiments.

EDUCATIONAL MATTERS.

The first efforts of those who desire a unification of the laws regulating the practice of dentistry, should be directed toward placing proper restrictions upon the granting of charters for schools and colleges. This is a matter that concerns medicine as nearly as it does our specialty. In the State of New York no charter can be granted for a college or university except by consent of the Regents of the University of the State of New York (a non-teaching body), and the actual raising of five hundred thousand dollars as a permanent endowment fund. In the State of Illinois any man can go to the Legislature and obtain a charter for a college at an expense of less than five dollars, and with practically no restrictions whatever. As a consequence, a considerable number of dentists carry around in their pockets charters for dental or medical colleges, and nothing prevents their opening a school in their private offices and graduating students, save the wholesome restrictions of the National Association of Dental Faculties. They know that they cannot be admitted there, and without that membership their diplomas will not be acknowledged anywhere.

Illinois should blush for the existence of such a state of affairs, and the dentists of that State should lose no time in bringing the matter before the Legislature. Is it because the children and future citizens of that State are so little regarded that no safeguards are put about their education? Shall their most important interests be intrusted to the keeping of uneducated, unprincipled men, who are simply struggling to make a dollar at the expense of their future welfare? Is there no principle or sense of propriety in the minds of the members of the legislatures of states which permit this lax condition of educational affairs, and is there no State pride that forbids their thus imperiling the future greatness of the commonwealth, through a debased educational system?

It is but a few years since all our educational matters were in a chaotic condition. Medical and dental diplomas were almost openly offered for sale by conscienceless men to whom had been granted charters for schools and colleges. Our professional educational system was a by-word among nations, because of the Buchanans, who were taking advantage of these loose regulations. There was then no redress, save that when diploma vending became too notorious, the legislature might possibly be persuaded to annul the charter. We are menaced by the same danger as long as charters can be so easily obtained.

Our professional education lies at the base of our professional status and well being. The first step in professional unification should be to obtain conformity to a recognized standard in the organization and conduct of our schools. The rest must inevitably follow, for if the fountain head is purified the stream will not be turbid. The National Association of Dental Faculties has done a great work in this direction; and when it learns to treat all its members alike, and not to permit known infractions of its most stringent rules by one school, while the others are held to a more than strict construction of a doubtful regulation; when men whose very membership in that institution is held by a tenure which they are foremost in denouncing in others; when, in short, it learns to do equal and exact justice to all, its power will be immensely increased. As it is, if it were not for that organization there is no doubt that the number of colleges in states in which there are but lax regulations regarding the organization and conduct of schools would be doubled, and the country would be flooded with diplomas of the Delavan, Wisconsin, kind.

BIBLIOGRAPHICAL.

A STANDARD DICTIONARY OF THE ENGLISH LANGUAGE. Upon Original Plans. Designed to give, in Complete and Accurate Statement, in the Light of the most Recent Advances in Knowledge, and in the Readiest form for Popular Use, the Meaning, Orthography and Etymology of all the Words and the Idiomatic Phrases in the Speech and Literature of the English-speaking Peoples. New York: Funk & Wagnalls Company.

To any one who makes any pretension whatever to familiarity with the English language, a complete dictionary is an essential. It is the general repository from which all knowledge of technical orthography and orthoepy must be derived. It is the arbiter to whose decision must be referred every question in lexicology. It is the intimate companion of one's most retired life, which is ever at hand, ever ready with suggestions, ever prepared for all literary emergencies. To him who reads, or writes, or speaks, or studies, it is indispensable. To the student in our schools and colleges, and to the professor or teacher who instructs him, it is alike a necessity, for neither can do his work well without it. It is the principal working tool for every man, woman or child, who has anything whatever to do with books. Good work cannot be done with bad implements, and this is as true in literary labor as it is in mechanics. The necessity for the best at the writing desk and in the library of the professional man, is as imperative as it is in the operating room or the surgery.

Lexicography has made greater advances within a decade or two, than during the whole previous history of our language. The vocabulary of Johnson, and Stormonth, and Webster, and Worcester, was but a restricted one, while in grouping, in defining, and even in spelling and pronunciation, they were comparatively crude. Then came the Century Dictionary, with its 225,000 words, and its marked advance in many directions, and it was believed by many that the highest practicable point in dictionary making had been reached, and that it must be years before anything to compete with it could be produced.

Almost immediately upon the heels of the Century there was announced a new work, the Standard, and it became known that almost unheard of sums were being expended in its preparation. The list of its compilers and editors comprised the most eminent men in the several great fields of science. There were no names so high, there were no acquirements so great, that they were not made contributory to the work, if money could secure their services. In its preparation and publication it was said that almost a million dollars would be expended before a single copy could be placed upon the market. Two hundred and forty-seven specialists and editors were engaged upon it, besides an army of clerks and ordinary workmen.

But money will not make a great book, unless it is intelligently expended. The list of the contributors and editors now shows that it was no mere vulgar display of resources that prompted the publishers in the organization of their staff. Men like Daniel G. Brinton, Simon Newcomb, Alexander Graham Bell, Gen. O. O. Howard, Admiral Stephen B. Luce, Carroll D. Wright, Miss Amelia B. Edwards, Goldwin Smith, and many others of like celebrity, do not risk their fame in problematical enterprises. We had a right, then, to look for something beyond the ordinary as the consequence of all this expenditure of money and labor, but the result exceeds all expectations.

The number of words is far in excess of those of any preceding dictionary. Stormonth had 50,000; Webster, 125,000; the Century, 225,000; the Standard has 300,000. Nor is this vocabulary made up of meaningless variations and modifications in spelling. Electricity alone contributes 4,000 new words, and the other modern sciences yield each its quota of terms that are permanent contributions to our literature. These make up the 75,000 words that are not found in any other dictionary, and their importance may be readily comprehended.

The grouping of the different terms, and the cross-references to other analogous or connected words, form another valuable feature, and enable the student to follow out the history of his subject in all its bearings. Its use of capital letters is new and original, and affords special instruction in that department, as in every other field of philology. Its illustrations, some of which are full page lithographs, are marvels for clearness, and its general tone, arrangement and appearance, mark it as a decided advance upon all previous works of its kind.

But nine persons out of ten who consult a dictionary do it for the purpose of obtaining information concerning either the spelling, the pronunciation, or the common meaning of terms. In these departments the Standard seems unapproachable. The great corps of editors to whom these matters were referred has given to each the most careful attention, and the clearness and conciseness of the definitions make them models for all time to come, while the spelling and pronunciation are according to the most exact rules of the language. The appendix, which it is usual to include in dictionaries, comprises information and tables which may not be enumerated here.

The Standard Dictionary, then, is a decided advance in lexicography, and is a valued acquisition in literature and science. With the possession of it every man may rest content in the assurance that he has the very highest authority that is known to our language. He will never turn to it in vain for the most exact knowledge concerning any term or any word which has an existence, and he will find within its covers an epitome of the entire scholarship of the age in which he lives. It is, withal, offered at a price that, considering the amount of matter which it contains, seems very low indeed, the single-volume edition, bound in half-Russia, being sold at twelve dollars, while for the two-volume edition, bound in full morocco, with Denison's patent reference, the price is but twenty-two dollars.

A MANUAL OF CHEMISTRY. A Guide to Lectures and Laboratory Work for Beginners in Chemistry. A Text Book Specially Adapted for Students of Medicine, Pharmacy and Dentistry; by W. Simon, Ph.D., M. D., Professor of Chemistry in the College of Physicians and Surgeons of Baltimore, in the Maryland College of Pharmacy, and in the Baltimore College of Dental Surgery. Fifth Edition; Thoroughly Revised, with forty-four Illustrations and eight Colored Plates, representing sixty-four Chemical Reaction. Cloth, $3.25. Philadelphia: Lea Brothers & Co., 1895.

The study of chemistry forms the basis of the investigation of every student in any of the medical sciences. It is the dread and fear of all Freshmen, and when not intelligently and systematically presented, it is their aversion and detestation, and yet a complete comprehension of its mysteries is absolutely essential to a successful professional career. The teachers who can invest its study with alluring and attractive features are very few indeed, and must be possessed of peculiar talents for the work; and yet, to any one with an analytical turn of mind, when properly presented it becomes one of the most fascinating studies. There is much of dry detail and technical definition that it is without the province of the lecturer to do more than briefly to summarize, and for the acquirement of these a text-book becomes a prime necessity. Upon the character of that book, very much of the success of the teacher in grounding the student in chemical principles will depend.

In the first place, the work must be thoroughly systematized, and the various properties of matter must be so grouped that their mutual relation and interdependence may be readily comprehended at the outset. The definitions must be clear and concise, and expressed in language that shall be not only easily undertsood, but attractive in diction. There must be a steady, yet almost imperceptible leading on from the enunciation of primary principles to that which is more abstruse and involved. The beginner must not be discouraged at the outset by introducing matter that is as yet beyond his powers of comprehension, but one principle mastered, it should be the stepping-stone to something yet higher. When this is the case, each page assists in making the next one plain, and the young student is carried from one height to another until organic chemistry is no longer a bugbear and a mystery.

That the work under notice amply fulfills all these demands, an examination of its table of contents and a reading of its text clearly shows, as does the fact that within less than two years it has reached its fifth edition. It has found favor at the hands of all classes of students, while it is an authority in the laboratory of the analytical chemist. Much of its contents has been especially prepared for the needs of classes in dentistry. In such of our schools as are departments in universities, the study of chemistry is pursued in the same classes and under the same teachers with medicine and pharmacy, and to such dental schools this work is peculiarly adapted.

Each year the course in all our advanced dental colleges becomes broader, and each succeeding graduating class is required to come up to a higher standard, especially in chemistry and physics. This work will be sufficient for the growth of a long future, and we cannot too strongly urge the selection of text-books of its class in all dental schools. There is none that more completely meets the demands of our students for yet broader teaching, and we most heartily commend it to all those who are interested.

DESCRIPTIVE ANATOMY OF THE HUMAN TEETH. By G. V. Black, M. D., D. D. S., Sc. D. Third Edition. Philadelphia: The Wilmington Dental Manufacturing Company. Price, $2.50.

There is nothing strange in the fact that a third edition of this work should so soon be demanded. It supplies a want that is more and more apparent as the scope of dental teaching becomes broader. Previous to its appearance there was no text-book in this important field. Apparently, no systematic morphological study of the organs which it is our province to treat, had been undertaken. Progress had been made in the study of their microscopical anatomy, but macroscopically they had been neglected. The demonstrated fitness of the author for the task to which he devoted himself, his great reputation as a competent histologist and a careful observer, with the admirable manner in which his work was done, all combined to make the book a success from the start.

It was necessary for him to arrange a nomenclature, and to originate many terms for anatomical features not before described. That terminology has been generally adopted by dentists, and has gone into our permanent literature. But with the progress of dental science it has been found necessary to modify and restrict some of them, and to introduce yet others. These changes are particularly set forth in this new edition. The text has also been changed in some other minor particulars. It now forms a complete system, and leaves little to wish in its important field. It is illustrated by nearly one hundred and fifty cuts, all of which illustrate the text, not one being introduced merely to fill out the pages. They are from original drawings by Prof. Black, and are models of clearness, when their size is taken into account.

DENTAL MEDICINE. A Manual of Dental Materia Medica and Therapeutics. By Ferdinand J. S. Gorgas, A. M., M. D., D. D. S., Editor of "Harris' Principles and Practice of Dentistry" and "Harris' Dictionary of Medical Terminology and Dental Surgery"; Professor of the Principles of Dental Science, Dental Surgery, etc., in the University of Maryland, Baltimore. Fifth Edition; Revised and Enlarged. Philadelphia: P. Blakiston, Son & Co., 1895. Cloth, $4.00.

There is little need to do more than simply to announce another edition of "Gorgas' Dental Medicine," that includes the new remedies and methods introduced since the last edition was placed upon the market. It has secured a permanent position in the list of our text-books, and it easily stands at the head of works of its kind. There is not a college in the land which has not adopted it as the first in authority, and it has a place in the library of every intelligent student and practitioner.

There are many things that have combined to give it this honorable distinction. In the first place, it is complete in its field, and every remedy which finds a place in the medicine case of the dentist is intelligently considered. Its plan is simple and easily comprehended. Its diction is easy and graceful, while its definitions are clear and concise. It contains many valuable tables and chapters upon inflammation, diagnosis, and therapeutics, that alone are worth more than the price of the book. It is indispensable to the successful practice of dentistry, and it is a mere work of supererogation to recommend it to all.

A COMPEND OF DENTAL PROSTHESIS AND METALLURGY. By Geo. W. Warren, D. D. S., Chief of the Clinical Staff, Pennsylvania College of Dental Surgery; Author of a "Compend of Dental Pathology and Dental Medicine"; Editor of "Richardson's Mechanical Dentistry," etc. With One Hundred and Twenty-nine Illustrations. Philadelphia: P. Blakiston, Son & Co. Cloth, $1.50.

While this work of 265 pages cannot be accepted as a full text-book in prosthetics, it contains much that is of value. There is something of prosthetic practice, a little of the chemistry of metals, the manufacture of obturators, interdental splints, irregularity appliances, crown and bridge work, etc., etc., and under each head may be found many useful hints, but there is not enough of either to make a complete guide for practice. It is, in fact, what its title indicates it to be, a compend of important principles, made up from more complete text-books. The illustrations are the stock cuts that are usually employed to pad out works of this kind, many of them being selected from the catalogues of dental dealers, and they are unworthy a place in a work that makes any pretense to originality.

A MANUAL OF DISEASES OF THE EAR; For the Use of Students and Practitioners of Medicine. By Albert H. Buck, M. D., Clinical Professor of the Diseases of the Ear, College of Physicians and Surgeons, Columbia College, New York; Consulting Oral Surgeon, New York Eye and Ear Infirmary, and the Presbyterian Hospital. Second Revised Edition. New York: William Wood & Company, 1895.

A book of this kind is often very useful to the oral surgeon and the dental practitioner, because of the complications which involve dental organs. This work of 450 pages offers a very complete and easily comprehended description of the diseases to which the ear is liable, and its chapters on diagnosis, pathology and symptomatology, if carefully studied, will be of great value to the practicing dentist in enabling him to distinguish between disturbances that have their origin in oral tissues, and those which have their inception in the ear. The dentist may not desire to treat the latter, but he should be able at least to determine what organ is affected.

SYLLABUS OF LECTURES ON HUMAN EMBRYOLOGY; An Introduction to the Study of Obstetrics and Gynæcology. For Medical Students and Practitioners. With a Glossary of Embryological Terms. By Walter Porter Manton, M. D., Professor of Clinical Gynæcology and Lecturer on Obstetrics in the Detroit College of Medicine. Illustrated with Seventy Outline Drawings and Photo-Engravings. 12mo, Cloth, 126 pages, interleaved for adding notes and other illustrations, $1.25 net. Philadelphia: The F. A. Davis Co., Publishers.

Some knowledge of the progressive steps in the impregnation of the ovum and the growth of the embryo is necessary for the medical student. The great work of Balfour is too complex and exhaustive for the use of the average undergraduate, and there has not heretofore been in existence a suitable abstract that should, within reasonable compass, furnish the essentials of embryology, without laboring over details, for which the student in medical schools has not the necessary time.

Prof. Manton's book supplies this want admirably. It is more the nature of a lexicon than of a connected treatise. All the terms in use are defined, and there is added to the name of each anatomical organ or tissue some account of its function and relations, while the phrases are fully explained in their embryological signification. The method of morphological development of each of the organs of the body is concisely stated, and directions for preparing the ova of different animals at successive stages are clearly given. It is admirably adapted to the needs of all who are commencing the study of embryology.

CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY FOR 1894. B. H. Catching, editor and publisher, Atlanta, Ga. Price $2.50.

For a number of years past Dr. Catching has issued an annual compendium of the progress of dentistry. The book is made up of selections from the journals, and from the different expressions made by representative men. It is the cream of the literature of the year, nothing, however, being printed *in extenso*, but everything given in a condensed form. Dr. Catching is admirably qualified for the task, because of his fine literary taste, and through his editorial experience as the editor of *The Southern Dental Journal*.

The volume for 1894 is fully up to the standard of its predecessors, and contains within its 300 pages a great amount of very valuable matter. There are many illustrations of the various articles, which serve to make its contents more clear.

There is an appendix containing a list of all the dental journals published in the world, with the names of all the new books. From this appendix we make up the following table, showing in what countries the fifty-four dental journals are published:

	WEEKLIES.	SEMI-MONTHLIES.	MONTHLIES.	BI-MONTHLIES.	QUARTERLIES.	TOTAL.
United States	. .	. .	11	4	5	20
England	. .	1	2	. .	. .	3
France	. .	. .	6	. .	. .	6
Germany	3	. .	2	1	1	7
Austria	. .	. .	. .	1	1	2
Holland	. .	. .	1	. .	. .	1
Switzerland	. .	. .	. .	. .	1	1
Italy	. .	. .	2	1	1	4
Sweden	. .	. .	. .	. .	1	1
Denmark	. .	. .	1	. .	. .	1
Russia	. .	. .	1	. .	. .	1
Spain	. .	. .	2	. .	. .	2
Norway	. .	. .	1	. .	. .	1
Finland	. .	. .	. .	. .	1	1
Cuba	. .	. .	1	. .	. .	1
Japan	. .	. .	1	. .	. .	1
South America	. .	. .	1	. .	. .	1

TRANSACTIONS OF THE WORLD'S COLUMBIAN DENTAL CONGRESS. Edited by A. W. Harlan, M. D., D. D. S., assisted by Louis Ottofy, D. D. S.

After the lapse of a year and a half the promised Transactions of the Columbian Congress are issued. They call for no special notice. The work of preparation is apparently well done, but the Congress itself by this time is well nigh forgotten, and the proceedings are stale matter. Events succeed each other so fast in our rapidly-growing profession, that a short time suffices to make the records of any meeting antiquated, unless they contain more of real original research than may be found in these volumes.

CURRENT NEWS AND EXCERPTS.

A SCHOOL OF DENTAL TECHNOLOGY.

For some years Dr. Geo. Cunningham, of Cambridge, England, has been laboring to establish a practical school for instruction in the technology of dentistry, and at last it seems as if his labors would be successful. We should think there was a crying need for such a school in England, where mechanics have but an unimportant place in the curriculum of the schools. The dental student is supposed to have a knowledge of prosthetics before he attends hospital lectures. The English system of education comprises an apprenticeship, after the manner of mechanical trades, for the prospective dentist, and under the instruction of his master he is supposed to become proficient in laboratory work.

But there are very few dentists who can be successful teachers, especially when they have made no study of educational methods, and are engaged in every day practice. Under such circumstances, English preceptors, as a class, must be of a different clay from the rest of mankind, if they devote enough time to their apprentices to turn them out expert mechanicians. And just here the benefits of Dr. Cunningham's school will be apparent, for it proposes to engage expert, experienced teachers, and to carry students through a complete mechanical course. They will thus be thoroughly prepared for entrance to the English schools. They will receive the instruction of trained teachers, who will be reputable and responsible men. This promises to be an approximation to the American educational system, under which the Faculty of the Dental School is charged with the entire professional education of the student. Progress in the several departments goes on simultaneously, and the pupil is not graduated until he exhibits his proficiency in all.

THE HORACE WELLS PERMANENT MEMORIAL.

UNDER THE AUSPICES OF THE AMERICAN DENTAL ASSOCIATION.

To the Dental Profession of America :

The Central Executive Committee appointed by the president of the American Dental Association is as follows : Dr. James Truman, Dr. Wilbur F. Litch, Dr. S. H. Guilford, Dr. E. C. Kirk, Dr. J. D. Thomas, chairman and treasurer.

This committee has been completed in its organization by including in its membership the presidents of all dental societies throughout the United States.

It is hoped to secure enough money to erect a bronze statue of Horace Wells in the national capital. The details as to the style and character of the statue, as well as its definite location, will be decided upon at the next meeting of the American Dental Association, to be held at Asbury Park, N. J.

The committee takes pleasure in calling your attention to this opportunity for doing an act of justice to the memory of a worthy member of our profession, whose discovery has been of such incalculable benefit to humanity, and which has been so great an honor to our profession. You are invited to contribute whatever amount of money you may feel able and willing to donate to the fund, and to use your influence toward bringing our plan to a successful issue in a manner befitting the object.

Contributions may be sent by any member of the profession through the president of his local society, or direct to the treasurer, Dr. J. D. Thomas, 912 Walnut street, Philadelphia. An official receipt will be issued by the treasurer for all contributions. The full list of contributors will be embodied in the pedestal of the memorial.

J. D. THOMAS,
Chairman of the Central Executive Committee.

VERY SINGULAR.

What a wonderfully credulous people the English are. Despite the fact that too many American dentists who go abroad are of a type that is discredited at home, despite the constant and reiterated warnings against so-called American dentistry, despite the repeated action of dental and other bodies that by implication, if not open assertion, declare American educational methods incomplete, and but a burlesque upon real professional teaching, the people of England will persist in flocking to the offices of American dentists, and really seem to believe that our training and practice are good enough for them. One of our English contemporaries says:

"If only the public could be convinced that years of patient education and manipulative practice, certified at intervals by careful expert examinations by authorized bodies, such as the College of Surgeons, were a better preparation for treating diseases of the teeth than the acquirement of an American mode of speech," etc.

The last allusion seems to be explained a little further along in the article by an allusion to a "Dr. with a nasal twang." All this is very courteous, professional, and broad-minded—unless, indeed, it should be observed in an American. However, our English friends are entitled to some consideration. It is rather provoking to see these professionally contemned Americans preferred above their so much better qualified English superiors, and that, too, in the heart of England itself.

AN ELECTRICAL CONTINUOUS GUM FURNACE.

Dr. L. E. Custer, of Dayton, O., has perhaps made as great advances as any other man in the utilization of electricity for dental purposes. His latest invention is an electrical oven for baking porcelain work. This is not larger than a vulcanizing flask, and like that is divided into two parts, through each of which a current that can be governed by means of a rheostat is conducted. The upper part of the miniature oven contains an aperture through which the process can be viewed and the exact period of fusing determined, when the current is at once shut off and the piece allowed to cool without removal. A yet smaller muffle is used for crown and bridge work. Of course, there can be no "gasing," there is no furnace, nor are there any fires to be built. The baking is accomplished in the smallest possible amount of time, and there is no work to be done, save to turn a switch-key. The method promises to idealize the making of continuous gum work, and to supersede every other method of baking porcelain. Dr. Custer visited Buffalo and New York with his furnace in the month of February.

PROFESSIONAL COLLEGES OF NEW YORK.

According to the report of the Regents of the University of New York, there were in the State last year 41 professional and technical colleges or schools. Of these, law had 7, with 1,460 men and 10 women as students; general medicine had 15, with 3,166 men and 216 women students; pharmacy had 3 schools, with 452 men and 3 women in attendance; dentistry had 3 schools. with 327 men and one woman as students, the solitary woman being credited to the Buffalo school. There was one school devoted to the eye and ear, with 7 men and 2 women students, while veterinary medicine had two schools, with 224 students, all men.

New York City had nineteen schools of law and medicine. Buffalo had two of medicine, and one each of dentistry, law and pharmacy. Albany had one each of law, medicine and pharmacy. Of the twelve special and technical schools (post-graduate and others), New York City had seven, but she was sadly lacking in theology, only two out of the twelve schools in the State being located in that city.

HON. E. CARLTON SPRAGUE, A. M., LL. D.

The University of Buffalo met with an almost irreparable loss in the death of its chancellor, February 14th. Mr. Sprague was not only a scholar of rare attainments, but he was a man of such transparent purity of character that he reflected honor upon every institution with which he was connected. His personal interest in the welfare of young men, especially those connected with the different departments of the University, was always active and apparent. His pride in the success of the Dental Department of the University, the youngest of its children, was frequently and emphatically expressed, and his interest in every development of its career was keen and unflagging. He was the constant and faithful counsellor of its managers, and in every step in its organization and conduct he was consulted and his approval secured. But a few days before his death he gave to one of them a sketch of certain plans which he had formed for the welfare of the Dental School, and which would tend greatly to benefit it. A sweeter, better, purer, nobler life was never lived, than that which closed when the Chancellor of the University of Buffalo ended his days.

RATHER LUDICROUS.

A writer in *The Dominion Dental Journal*, who is very instructive indeed when he confines himself to matters with which he is acquainted, makes this bad break when he strays into the domain of the unknown:

> "Bacteria are the smallest of all known organisms, and though near the border line between animal and vegetable life, are commonly classed among the plants. They increase and multiply, and are endowed with a peculiar quality called life. Yet they have not the power to move from place to place, only as they are carried by the air or by instruments to the mouth, by dentists or physicians, or various other ways. They are propagated by spores; from one to several may be liberated from one cell."

That is funny science. Why, man, these organisms are as much vegetable as a potato. To be sure, they belong to the cryptogams, and not the phanerogams, but they are a part of the vegetable kingdom as much as if they were flowering plants. Queer, is it not, that they should be without the power of moving from place to place? Are you sure that you have not exaggerated when you so sapiently affirm that from one spore to several may be liberated from one cell?

A CHANGE.—The late New York correspondent of the Chicago *Dental Review* has transferred his services to the *Pacific Coast Dentist*. With all due respect to him and to his undoubted honesty of purpose, we cannot escape the conclusion that the former journal deserves more hearty congratulations than does the latter. Communications written in the style of those found in the bucolic weekly newspaper, made up exclusively of personalities, unauthorized allusions to private matters, and unseemly violations of that sanctity that should surround the private life of every individual, the seclusion of which all honorable men are supposed to respect, neither add to the fame of the writer, the dignity of a supposedly respectable profession, or the reputation of the journal in which they appear.

ANTIQUATED.—Some of our *not* up-to-date dental journals do certain of our colleges an injury by publishing their names in the list of unrecognized colleges a long time after they have complied with all regulations and been admitted to the National Association of Dental Faculties. This occurs through their printing the reports of last year, which were made in July, 1894. The appearance of those old reports in the year 1895 is an indication of the enterprise of the journals in which they are published.

ADVANCE OR RECESSION?—Dr. Frank Abbott, M. D., of the New York College of Dentistry, said at the last meeting of the American Dental Association, that he had abandoned attempts to dry root canals before filling them. He removes the contents as well as possible, and then injects an aqueous solution of bi-chloride of mercury with a syringe. Without drying it out, he now carries a pledget of cotton to the end of the canal, packs it down closely, and upon this he immediately inserts a root filling of oxychloride of zinc.

The query naturally suggests itself, does he attempt to dry out the tooth cavity before filling that, or does he insert his gold submarine? He has repeatedly said that he does not use the rubber dam—or at least not once in a hundred times. Has he succeeded in making two substances occupy the same space at the same time? Prof. Abbott is either very far in advance, or an equal distance behind the profession.

SPREAD EAGLE ORATORY.—*The Dental Record*, of London, says of the speeches at our Memorial Anæsthesia meetings: "We are at times carried out of ourselves by the pictures drawn of the benefits accruing from the use of anæsthesia, and anon left floating in mid-air, wondering where we are, and what its (*sic.*) all about, and if it is not perilously near bathos." Making due allowance for the peculiar inverted passive figure, which represents us as being "carried out of ourselves," and for some eccentricities of grammar, we are inclined to think that the *Record* comes perilously near to the truth. Perhaps the circumstances of the occasion were an excuse for the employment of lurid rhetoric, if it is ever excusable, but there is truth in the intimation that we are too fond of pyrotechnical displays of language, and that this is too often mistaken for oratory.

DEATH OF MRS. SOUTHWICK.—Died at the family residence in Buffalo, February 9th, Maria M., wife of Dr. A. P. Southwick. Mrs. Southwick had for some time been suffering from a complication of disorders, which she bore with exemplary resignation and patience. Immediately upon the knowledge of her decease, a meeting of all the students of the Dental Department was called by the President of the Senior Class. An address of sympathy with Prof. Southwick was unanimously adopted, and a delegation was appointed to attend the funeral. A beautiful floral emblem was procured, and it was voted to request the Faculty to close the department for the day. The Faculty attended the funeral in a body. The interment was at Forest Lawn.

HE MISSED IT.—How easily Prof. Warren, of Boston, missed what men most earnestly strive for, when he declined to stay after his lecture and witness the first administration of an anæsthetic before a medical class. Had he remained and assisted in the demonstration, it would undoubtedly have linked his name to that of Wells for all ages, for he might have made that administration a greater success than it was. But at that time high professors would have resented being classed with Wells, the obscure dentist. Now the name of Wells has become immortal, and Warren is simply the man who rejected his great opportunity.

PICTURES OF HORACE WELLS.—Many people have expressed a desire to obtain some authentic likeness of the discoverer of Anæsthesia. The *Connecticut Quarterly* for January, 1895, contains such an one, with representations of the Hartford statue and memorial tablet, etc., etc., all used as illustrations to an article by Dr. James McManus, upon the "History of the Discovery of Anæsthesia." If any one desires a copy, it can be obtained for 15 cents by addressing that journal at Hartford.

"NURVE CAPS."—With a great deal of pleasure we comply with the subjoined request. To be sure, we do not just know what a "bleeding nurve" is, but the profound erudition of this great and original discoverer could undoubtedly illumine the darkness of our understanding. If the discovery of this writer is as original and unique as his spelling, he ought to have no difficulty in patenting his invention. There is no charge for the advertisement:

"Pleas insurt the following in Practitioner, first issue, and write me upon receipt of This and state terms for this advertisement—for 3. months to a year be as liberal as posible (Notice) to introduce my medicated nurve caps to the profession I sell sample Pkgs containing 15 for 25c large Pkgs 100 in Pk $1.00 i have used them for 6 years in my practice and they have never failed me in the most extreme cases of exposed nerve that was bleeding and paining at time of operation try them and be convinced full Directions with each Pkg."

THE DENTAL SOCIETY OF THE STATE OF NEW YORK.—The twenty-seventh annual meeting of this society will be held in Academy Hall, 42 North Pearl street, Albany, May 8 and 9, 1895. The subject for the meeting will be "Green-stain," and divided as follows:

"The Etiology," illustrated with lantern slides, etc., by CARL THEODORE GRAMM, M. D., Chicago, Ill.
"The Classification," by W. C. BARRETT, M. D., D. D. S., Buffalo, N. Y.
"The Therapeutics," by S. B. PALMER, M. D. S., Syracuse, N. Y.

The Board of Censors will convene in the above hall at 9 A. M., Tuesday the 7th, for the examination of candidates for the degree of M. D. S.

CHARLES S. BUTLER, *Secretary*.

AS WE EXPECTED.—Some time ago J. T. Atkinson, Secretary of the "Kansas City College of Dental Surgery," commenced a suit against the *Western Dental Journal* for stigmatizing that so-called college as a "Diploma Mill." This journal gave its opinion of the matter at the time. Dr. Atkinson's suit was apparently only a bluff, for he has not pressed it, and it was lately thrown out of court. Ten thousand dollars, the amount claimed, seemed like a large sum to pay for any damages that could possibly result to an institution like that criticised. If ten cents had been demanded, we should have advised the *Western Dental Journal* to settle; but more than that, under the circumstances, seemed extortionate.

RETURNED.—Dr. A. W. Harlan, the founder or the *Chicago Dental Review*, who retired from its editorship a year ago, has again taken charge of that journal. When a man has once demonstrated an editorial adaptability, and has a liking for the rather laborious duties of such a position, it is hard for him to hold aloof from journalism. His fingers itch for the editorial pen, and there is always an importunate demand for his services. Hence the return of Dr. Harlan is what might have been expected. We shall look to see the *Review* become even better than it has been in the past.

SOCIETY BULLETINS.—Both the Connecticut State and the Central Dental Association of Northern New Jersey publish quarterly or monthly bulletins containing information for the members. They are not very ambitious in size or appearance, containing little more matter than one of these pages, but if well prepared they may be of great use to a society. They will help to maintain interest in an association, and be the means of diffusing valuable information upon society affairs. But they should not be given up to stale jests, or frivolous paragraphs.

Don't Need It.—The following interesting reply was returned to a circular letter soliciting subscriptions to a certain medical journal:

Fairibault, Minn., Feb. 22, 1894.

Your copy of the ———— Journal came, and the letter to ————, askin me to send fifty cents and git it for a year. I don't need no jurnals. When I git a tuff case I go off inter some secrit plase and tell the lord all about it, and wate for him to put inter my minde what ter do. That's bettern jurnals, syklopedes and such. If we had more lord trusting doctors and less colleges weed fare better. The lord noes moren all the doctors, and if we go to him for our noledge it will be bettern jurnals.

Fraternally in the lord,
A Christian Doctor.

P. S.—I have practist medisen morn fifty years. Yore ken publish this letter ef you wanter.—*Northwestern Lancet.*

Illinois State Dental Society.—The thirty-first annual meeting of the Illinois State Dental Society will be held at Galesburg, May 14 to 17 inclusive. All dentists practicing in Illinois are especially invited to attend. A cordial invitation is extended to the profession generally. This will be the first meeting in Galesburg since 1876, and it is the hope of the officers that it will be one of the most profitable meetings in the history of the Society. An interesting programme is in course of preparation.

Louis Ottofy, *Secretary.*

Commencement.—The commencement exercises of the Medical, Dental and Pharmacal Departments of the University of Buffalo, will this year occur on Tuesday, April 30th. The Curators of the Dental Department will meet at the University at 9 o'clock, and the day will be devoted to the examination of the Senior Class. The graduating exercises will be held in the evening, at Music Hall, after which the annual banquet will be given.

Weight Equivalents.—To convert grains into grammes, multiply by 0.065.
To convert grammes into grains, multiply by 15.5.
To convert drachms into grammes, multiply by 3.9.
To convert ounces (avoir.) into grammes, multiply by 28.4.
To convert pounds into grammes, multiply by 453.6.

A Luxury.—A most delicious and refreshing breakfast or lunch beverage for the much worked dentist is known as "Phillips' Digestible Cocoa." It possesses a rich, delicate chocolate flavor, and is devoid of any of the deleterious effects often experienced in the use of coffee, tea or preparations of cocoa ordinarily found in market. It can be procured from druggists or grocers.

Tri-State Meeting.—The Russell House, Detroit, has been selected as headquarters for the joint meeting of the State Societies of Michigan, Ohio and Indiana, which will occur June 18, 19 and 20. The clinics and scientific sessions will be held in the Dental Department of the Detroit College of Medicine and Surgery.

Dental Assistants.—If any practitioner desires an assistant, he can obtain one by writing to the editor of this journal. There are always young men of excellent acquirements, fresh from college, who desire situations, and for whose services but a moderate compensation will be demanded.

SYPHILITIC INOCULATION.—Dr. Judkins says syphilis is so wide-spread and contagious that it is rather surprising that it claims no more innocent victims than it does. The author now reports two cases contracted in barber shops, one from the use of the hair clipper, and one from a papular syphilide of the barber's hand.

ELECTROZONE.—A new preparation of this excellent disinfectant for medical use has been placed upon the market by Mr. Woolf. It is called Meditrina. We do not understand that it differs from ordinary electrozone, except that it is more carefully prepared from filtered sea water and is put up in neater form.

AN EASY METHOD.—Cavities may be made in porcelain teeth for the insertion of gold fillings by using a corundum disk. A groove with an undercut is ground in to mark the boundaries of the filling, and the intervening porcelain is ground down between them with a stone. It needs but a shallow depression.

AMALGAM.—Mixing an amalgam in the hand is a slovenly, dirty way of preparing it. The sebaceous matter, grease and perspiration from the skin is incorporated with it, and must injure it. Gold could not be thus handled, and amalgam should not be. Mix it in a small mortar, and keep it clean.

DEVITALIZING PASTE.—When an arsenical preparation is used, a pledget of cotton as large as the bottle will accommodate should be placed in it and made to absorb the paste, and contain it in the meshes. A very small piece of this can be cut off and carried to position with ease and security.

PROPHYLACTIC MEASURES.—Thirty or forty drops of aromatic spirits of ammonia, or ten grains of bromide of potassium, administered before a dental operation, will often quiet the nervous excitability of a patient, and render operations possible that are impossible without it.

ANOTHER DENTAL CONGRESS.—*The British Journal of Dental Science* says that an International Dental Congress may possibly be arranged for England, in 1897, if any marked desire to that effect is made known. Are they waiting for this expression from America?

SIGNIFICANT.—The wife of Mr. Rosenberger, of Kittaning, Pa., presented him with five children at one birth recently. Says the *Medical Record:* "The birthplace of the children, though curiously spelled, has a significant association with the event."

EIGHTH DISTRICT DENTAL SOCIETY.—The regular annual meeting of this Society will be held in the city of Buffalo, commencing Tuesday, April 23d. The programme is in process of preparation and will be issued in due time.

LOCAL ANÆSTHESIA.—A mixture of ten parts of chloroform, fifteen of ether, and one of menthol, used as a spray, is recommended as an excellent and prompt means of obtaining local anæsthesia, lasting for about five minutes.

CERTAINLY.—"Electrozone is said to be a coagulator of albumen." That is one of its greatest virtues. It could scarcely be very effective for that for which it was recommended if it were not.

THE

DENTAL PRACTITIONER

AND ADVERTISER.

A QUARTERLY JOURNAL, DEVOTED TO
THE ADVANCEMENT OF THE
DENTAL PROFESSION.

W. C. BARRETT, M. D.; D. D. S.;
EDITOR.

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THE DENTAL PRACTITIONER AND ADVERTISER.

VOL. XXVII.—BUFFALO, N. Y., JANUARY, 1896.—No. 1.

SYNOPSIS OF THE ADDRESS AT THE OPENING OF THE FOURTH ANNUAL SESSION OF THE DENTAL DEPARTMENT OF THE UNIVERSITY OF BUFFALO.

BY ROSWELL PARK, A. M., M. D.

Professor of Surgery in the Medical Department and of Surgical Pathology in the Dental Department.

Gentlemen :—

It is perhaps not entirely inappropriate that I venture to address you upon the opening of this fourth session, because I am privileged to speak to you not only as one of your regular teachers and as a member of the Council of the University, but because from the very inception of the movement toward the foundation of this school, I have not hesitated to declare myself as an ardent friend and supporter of the new institution, and because by appearing in this way tonight I may the more emphatically congratulate you and the founders of the school upon the remarkable, yes, unparalleled, success which has been here achieved in the short time. But, with their labors and their victories, you are as conversant as I, and, with this brief allusion to the past, I prefer rather to deal with topics of professional interest.

Called upon at short notice to welcome you here, and to offer remarks of general professional interest, it occurs to me to be retrospective for awhile, and to consider the steps by which that which was once an exceedingly crude art has been developed until now it is an exact science. In other words, I would invite your attention for a time to the history of dentistry. At a time even before our combined art and science had a definite history, we find that gold was used among the Egyptians for the purpose both of filling teeth and of supporting and directing them. In the bodies of many Egyptian mummies, especially of the higher class, there have been found teeth filled with gold or with wood which was covered with gold. It is known also that the Hindoos and Egyptians inserted artificial teeth, and that some of these were made of wood, often covered with gold, and held in place by gold or silver bands and wires. Herodotus, who traveled so extensively in Egypt and wrote most entertainingly of his travels, has noted the division of medicine among the Egyptians into special branches, and the existence of physicians, each of whom applied himself to one disease and not to more. "Some," said he, "are for the eyes, others for the head, *others for the teeth*, and others for internal disorders."

It is known also that about 300 B. C. Erasistratus deposited in the temple of the Delphian Apollo an *odontogogue*, or tooth forceps made of *lead*, intimating thereby that only those teeth should be drawn which were loose enough to be extracted with such an instrument.

Celsus, who was a contemporary of Christ and of Cæsar, was the first to recommend the use of a file within the mouth for the purpose of removing irritating edges and points of teeth. He also recommended bursting hollow teeth by putting into them pepper corns, which should absorb moisture, swell, and thus break the teeth in pieces. He also recommended to take particular pains to try to shake or manipulate teeth loose before extracting them.

Galen, about 150 A. D., taught that teeth were true bones, and that the canine teeth should be called "eye" teeth, because they were supplied by a branch of the optic nerve. Aetius, 300 A. D., apparently discovered the foramina at the roots of the teeth, through which the nerves enter.

In Rome false teeth and sets of teeth constructed of ivory, and fastened with gold wire, existed as early as the Laws of the XII. tables, and before the days of Roman civilization it is known that the Etruscans were skilled in manipulation of gold within the mouth; while your Dean, Dr. Barrett, has described, and has, I believe, in his possession, beautiful examples of Etruscan work of this kind.

Among the Arabs, after the Arabian domination of the then civilized world, attention was paid to the teeth, although this was considered a very inferior part of the physician's work. Among these Arabians much later, and in spite of their study of Greek writers and their translations from the Greek, there may still be met such passages as this from Garriopontus, 1045 A. D.: "On the island of Delphi a painful molar tooth, which was extracted by an inexperienced physician, occasioned the death of a philosopher, for the marrow of the tooth, which originates from the brain, ran down into the lungs, and killed that philosopher." For all that I know, this is the first record of a death after extraction of a tooth. Albucasis, 1100 A. D., gave directions for replacing lost teeth by natural or ivory substitutes. For centuries extraction of teeth had been and was considered a critical and dangerous operation, although itinerant quacks drew them without hesitation. . . . . .

(The speaker then read extracts from a number of the Roman poets, alluding in one way or another to the care of the teeth, or to operations performed upon them.)

During the Middle Ages the most celebrated medical school that the world ever saw was founded at Salernum, and was for several centuries the headquarters to which resorted men who desired to study medicine, and patients from all parts of the world who desired to be cured of various diseases. It was a favorite stopping place for Crusaders on their way to and from the Orient, and history relates many interesting episodes pertaining to such visits. Under the influence of this school, dentistry was more or less cultivated by those who practiced surgery. Bruno, of Langoburgo (about 1250), mentions various operations upon the teeth and the antrum, although that was nearly 400 years before Highmore carefully described this cavity. Johannes Arculanus (Giovanni d'Arcoli), in the fifteenth century, filled teeth with gold. I must digress for a moment to speak of another suggestion of Arculanus's. You know that quite recently the use of the magnet has come into vogue among oculists for the removal of foreign particles of iron or steel from the anterior chamber or the globe of the eye. It was Arculanus who, some 500 years ago, suggested extraction of iron splinters from the eye by means of the *attraction of amber electrified by friction.*

During the sixteenth and seventeenth centuries the French surgeons, especially Dionis and Verduc, made many practical contributions to dentistry. In 1728 Fauchard wrote in Paris the first complete work on dentistry—"*Le Chirurgien Dentiste, ou Traité des Dents.*" Auzebi, of Lyons, wrote another. Le Cluse was the first to mention the English turnkey for extraction. Jourdain introduced a number of new and appropriate instruments and new forms of artificial teeth. Bourdet, dentist to the King, made artificial palates. Porcelain teeth were first introduced in France in 1774.

Among the Germans, cosmetic dentistry, though still the favorite field of charlatans, was greatly cultivated. Serré wrote a treatise on "*Toothache in the Fair Sex during Pregnancy.*" But the first public dental clinic in Germany was not established until 1855, by Prof. Albrecht, and in Vienna. It has been in Vienna, among the Germans, that dentistry has been in time past most honored, and was taught when it was scarcely recognized in the other German universities. Private dental institutions were also first established in Vienna.

Of all the tooth extracting instruments, the dental forceps in crude form is the earliest, the first on record perhaps being that deposited by

Erasistratus in the Delphian temple, as already mentioned to you. For hundreds of years these instruments scarcely changed in shape. It was Garengeot who invented the *key*, early during the last century. Before that, and for a while, dentists who had abandoned the forceps used an instrument known as *the pelican*—said to much resemble the skid used by lumbermen.

Before artificial (porcelain) teeth came into use, the following substitutes were employed, their estimated value being in accordance with the order in which I name them: Human teeth, animal teeth, hippopotamus tusk and teeth, elephant ivory, bone.

Human Teeth.—Transplantation of teeth was at one time very common. After being inserted, they were held in place by pivots and ligatures, springs, and upon bases. The pivot method also included the use of screws. Ligatures for fastening teeth were made of silkworm gut, which, now so common in surgery, was used for this purpose perhaps 200 years ago, gold wire, etc. The method by ligatures is the earliest of all. Human teeth have always been more or less expensive if fresh, few people being willing to part with sound teeth except for a money consideration. In 1784 a Philadelphia dentist offered in an advertisement two guineas each for sound front teeth.

Animal Teeth.—These were largely used, being held in place the same way as above, the principal objection being that it was difficult, often impossible, to match human with animal teeth. It was found also that the latter decayed very much more easily.

Hippopotamus Ivory.—This was at one time very extensively used. It was carved into the shape of the missing teeth, and was held upon a base; or it was carved into shape as a base upon which to rest human teeth. Most often it was used as a base for pivoting. Not infrequently a block was carved out which represented gum, teeth and all, and partial dentures of this complex type were often so deftly fashioned as to be very realistic, the part representing the gum being colored. Unfortunately no dye nor color in the mouth could be made permanent.

Elephant Ivory.—This was used for the cheaper grades of work, being less durable.

Bone.—Bone was still more objectionable, and was used for only the cheapest work.

Artificial porcelain teeth were first introduced in France in 1774, and in America in 1817. Those which were first made were so large, awkward, rough and ill-fashioned, without attempt to represent the gum, as to bear no comparison to the artistic products of today. They were intended for the most part for attachment to ivory bases. The artificial dentures made for George Washington were of this general character, and, although they called forth his encomiums in a letter to his dentist expressing his gratitude, they would pass for very shabby productions today. One of the greatest advances in dentistry was the introduction of gold bases as a substitute for the base plates previously made of ivory or bone. This is distinctly an American invention, and is to be credited to Gardette, of Philadelphia, who produced the first bases of this kind in 1787. Since then other metals have been used only because cheaper, none having the valuable properties of gold.

Gutta-percha was introduced for this and various dental purposes in England, in 1851, by Trueman. In 1851, too, came Goodyear's process of vulcanizing, which the dental profession were at first slow to avail themselves of, but which led, as its value was recognized later, to expensive and almost endless litigation.

Another most valuable American invention was that of taking impressions by use of plaster. This was introduced about 1844–45. This method permitted the making of socket plates, which, of itself, was a long step in advance.

So much for a very brief epitome of some of the most interesting facts in the history of dentistry. Did time permit, the matter would warrant treatment at much greater length. But what now is to be said of the condition of dentistry today? First of all, that it is no longer relegated to charlatans and itinerants, but is studied, practiced and honored by men of the ablest minds and of the highest type. There is today scarcely any branch of applied science which calls for greater qualifications, nor for greater combination of mental endowment and manual dexterity, than does dentistry. We find ourselves now in position where the State has assumed not only to regulate the practice of dentistry, but even to pass upon the qualifications of those who propose to study it. In the assumption of this task by the State, there is paid perhaps the greatest possible compliment to its dignity and to its importance.

The great field of medicine is now altogether too vast, and the various branches which pertain to it are too complex, to permit a mastery of all its details by any one mind. The man does not live who today can be considered *facile princeps* in more than a few departments of medicine. Life is too short to permit of it, and the study is altogether too extensive. There is also a growing public demand for specialization of work, and there is probably more excuse for the perpetuation of dentistry as a specialty than for almost any other branch. Nevertheless, it is necessary constantly to repress a tendency toward a failure to comprehend the general principles underlying all medical specialties, and it has been hard, at least until recently, to impress upon the men of your profession that they were really only practicing a branch of ours, and that in disregarding a general and comprehensive knowledge of the fundamental branches, they were but poorly preparing themselves for the practice of a dignified specialty. Certainly dentistry makes as many demands upon us for mechanical training, digital dexterity, familiarity with the properties of materials, etc., as does surgery, and in some respects even more. Of course, to a certain extent in these respects, it is like a mechanical trade. If you will permit me to say so, the great trouble with the dental profession, until very recent times, is that they have regarded their work too much as a trade and not enough as a profession. By taking the latter view of it, the work is ennobled and their interest for it cultivated. By taking the trade view of it, they have lost those finer features which lift mechanical work out of the mere level of the trade. Moreover, men in time past have been guilty of altogether too much of trades' union tactics, which are vehemently opposed to professional ethics, and this has been another feature to degrade rather than elevate dentistry.

This has been indeed a great misfortune, for men have been misled by the need for cultivation of their hands or their manual powers, and have been persuaded away from a finer study of fundamental principles upon which the whole practice of dentistry should be based. And so it has happened that men have been so ambitious to become perfect operators that they have neglected anatomy, physiology, chemistry and pathology, have even neglected odontology, sacrificing everything else to their work as mere artificers.

If one scrutinizes the subject properly, there is no reason why there should not grow up a class of men fitted to attend to any lesion of the mouth or of the parts adjoining. In other words, there is no reason why there is not more excuse for true oral surgeons than there is for any other class of specialists, save possibly those who treat the eye. Aural surgery, nasal surgery, pelvic surgery, rectal surgery, etc., are simply voluntary limitations and applications of general surgery to special parts; but he who attends to the teeth has to do so much work of a character which the surgeon is not called upon to perform in any other area, that I have always claimed the oral surgeon deserved a place, as he had a field, by himself. Nevertheless, the knowledge which shall fit a man for such work is not to be obtained in the ordinary dental course, nor in three years of study, even under the best of auspices. The man who would be an ideal oral surgeon must be not only generally familiar with anatomy and physiology, but must thoroughly know the embryology of the face and teeth, the physiology not alone of the organs of the mouth, but of all the secreting glands and the chemistry of all their secretions; not only the anatomy of the cranium, but general anatomy as well, and even comparative anatomy. He must be well informed in the explanations of all the congenital defects met about the face and mouth; he must be familiar not only with the ordinary principles of pathology and bacteriology, but he will find in the fluids about the mouth such a fertile opportunity for bacteriological study that, be he ever so expert or erudite, he has still much left to investigate in this direction. There is no disease germ with which he can afford to be unfamiliar, and, as any form of tumor may be found in or about the mouth, he should be familiar with the entire subject of tumors and their surgical treatment.

Then, again, he must be familiar not only with the physical properties of metals and the various materials used in plastic dentistry, nor expert alone in the operations about the teeth, but, inasmuch as he has to cope with various wounds, injuries and operations about the soft parts, he must be thoroughly familiar with the principles of wound healing; with the causes of sepsis and the agents which produce it, and the means of avoiding it; in other words, he must have a general training in operative surgery and, according to my ideal, which may be high, he should be a man able to do almost any operation in surgery before he limits himself to the surgery of the mouth. Unless he have this ability, he will not do this operation as well as a general surgeon can, because the underlying principles are the same, and the latter will have the greater command over them.

When, then, this perhaps ideal man has become thoroughly familiar with the principles of surgical anatomy, operative surgery, surgical pathology and bacteriology, in addition to the things already mentioned, then, and not until then, may he and should he assume to operate for harelip, cleft palate, cancer of the tongue and various other lesions in the parts about the mouth.

Perhaps you will say this is more than common dentistry. Granted. But I am simply recounting that to which the man who chooses to limit himself to oral disease may follow legitimately, and which a very few eminent men, at home and abroad, have attained to. The knowledge thus called for is difficult to acquire; at least five or six years of constant work and study would be necessary before one would be in position to commence work as such an oral surgeon. Few men are willing to give the time, and consequently there will be but few such oral surgeons. In consequence the probability is that, at least for some years, most men who study dentistry will confine themselves absolutely to the teeth, while the general surgeon will do the balance of the work, each working apart from the other on parallel lines, which each must frequently cross in order to call in the assistance of the other. But this is rather an artificial distinction, made so by the limitations of human ability, interest and opportunity, than by any necessary factors.

It is in recognition of certain of these facts that the Dental Faculty of our University saw fit, at the beginning, to establish such a chair as that of surgical pathology, with which they honored me.

I wish I could say and demonstrate more to impress upon you the important bearing of modern surgical pathology to dentistry. Perhaps I can give you no better illustrations than you can see in the studies and writings of Prof. W. D. Miller, of Berlin, of whom I am proud to say that he is an American, and that he is the only American occupying a professorship in a German University. He has many friends in this city, who are always proud to do him honor; and, in fact, the first impetus toward the practical study of bacteriology which was given to Buffalonians, at a time when the study was so new, we owe to a visit made by Dr. Miller to this .country, during which he exhibited numerous cultures, specimens, etc., which prompted our devotion to this work. In his studies on the causes of dental caries and upon the bacteria of the mouth, he has identified and named nearly a hundred species of bacteria, many of which he has shown to be the active causes of dental decay. He has done, then, for dental pathology in this direction, what other eminent observers have done for the processes of suppuration and ulceration in other textures and tissues, and has helped to show that they are all evidences of pernicious germ activity. By his researches also upon inflammation in elephant tusks, and the results of injury, mainly by bullet wounds, he has shown us that the phenomena attending these changes in dental tissues are practically identical with those in bone. His researches have done very much to explain the pathology of that common disease, pyorrhœa alveolaris, which is known to be but one expression of local infection, while the possibility of migration of infectious organisms and of metastatic lesions in other parts of the body, having their origin in infectious disease in or near the teeth, has been brilliantly demonstrated by his interpretation of well-known clinical facts. That an American can make such brilliant demonstration in university circles, where it is generally held there is nothing good save that of German origin, becomes to all of us a source of mutual congratulation.

That American dentists are most highly regarded abroad is more than a matter of everyday knowledge. It has got to be so now that a foreigner will purchase instruments of American make, and then advertise himself as an American dentist for the purpose of getting business—a purpose in which, as a rule, he is quite successful. But let me stop here to do honor to another American dentist, who is more highly honored abroad than one ever can be at home, and of whom it might be said, perhaps, that he has had more friends among the royalty and nobility of Europe than any other man of his time. This is Dr. Evans, who has lived for years in Paris, who was the personal friend of Napoleon III., and the trusted guide and companion of the Empress Eugenie when she fled from Paris. While it may be said of him that the qualities that made him so universally popular were personal qualities, rather than professional knowledge, it must be said in reply that it was his eminent prefessional attainment which first brought him such influential friends.

But time presses and I want, before closing, to say a few words about our own school and about dentistry in America. It was about 1835 that Dr. Harris, then residing in Baltimore, though born near Syracuse in our own State, conceived the modern idea of the scope and practice of dentistry. He was ambitious to put the dentists of his time upon a higher professional level, and to make of dentistry a specialty in medicine. He applied to various medical schools to found dental chairs and to teach oral pathology along with dental mechanics, as one of the branches of medicine, the graduating degree to be M. D., as with other medical specialties. But the men of his time were so short-sighted and of such constricted mental calibre, and the dentists were so uneducated, that the Baltimore schools declined. He, therefore, established a separate school, being forced to take this step. This school was the Baltimore College of Dental Surgery, established in 1839, the first in any country. The dentistry of that day was crude, and its teaching was comparatively inefficient. It was not until six years later that the next, the Cincinnati (Ohio) College of Dental Surgery was organized, in 1845. Then, in time, followed Philadelphia. But all these colleges were separate institutions, teaching only those branches which it was held necessary that a *dentist* should know, and having very little of medicine in their curriculum. They conferred the degree of D. D. S.

In 1868 Harvard University did what she ought to have done at the outset. She opened a dental department and began the teaching of dentistry as a branch of medicine, establishing therefor a separate degree, D. M. D., *Dentariæ Medicinæ Doctor.* In 1874 the University of Michigan established a dental department, and a little later the University of Pennsylvania did the same. These university schools gave an immensely widened scope to the study, which was made broader with each succeeding year.

There are now forty-five dental colleges in the United States. Forty of these are members of the National Association of Dental Faculties, organized for the purpose of securing uniformity in teaching and in graduating men. Membership in this Association is a certificate of high standing and of comprehensive advantages.

Last year the number of students in dental colleges was 4,979, while the number of graduates last year was 1,208. At present nearly all the States have legislation governing the practice of dentistry, and often more strict than that regulating the practice of medicine. In this State the law places dentistry on precisely the same plane as medicine, prescribes the same qualifications for matriculation, the same length of study, exactions for graduation, examination, etc. In other words, the law is quite as strict regarding admission to dental colleges as to medical. After 1897, at least a full high-school course will be demanded for matriculation, and from now on we may look forward to having a really educated dental profession.

Our own school had its inception in resolutions passed by the Eighth District Dental Society, in 1868. Various circumstances conspired to postpone the undertaking, until the day when the University of Buffalo Medical Department planned its new building, at which time provision was made for the Departments of Dentistry and of Pharmacy, at least until they should outgrow them. The first session was opened in 1892. It saw forty-six matriculants. The second session we had eighty-eight; the third, one hundred and sixty. This, the fourth year, opens with a freshman class of seventy-five, the total attendance promising to be nearly two hundred. No school has ever attained anything like the same success within the same length of time. Of the forty-five schools in the United States, only eight have larger classes than this, which is the youngest and most progressive of them all. What can better redound to the credit of the men who have organized it? I am sure that you will unite with me in exclaiming: "All honor and congratulation to the band of devoted men who have planned for years the establishment of this school, and who have so successfully carried it out!" May your own exertions be stimulated, then, by that which you see has been accomplished here in so short a time, and may you be as successful in all your own efforts as these men have been in theirs.

DENTAL SCIENCE THEN AND NOW.

BY DR. S. B. PALMER, SYRACUSE, N. Y.

Read at the Twenty-seventh Union Dental Convention of the Sixth, Seventh and Eighth District Dental Societies of the State of New York, held at Binghamton Oct. 29, 30 and 31, 1895.

At no time in the history of dental science has the subject of operative dentistry claimed the attention of the profession more than it does today. In 1839 the first dental periodical in the world was issued, entitled *The American Journal of Dental Science.* Then little was known of true dental science. Etiology of dental caries and filling teeth have been themes for discussion until now, with flattering success and fond hopes that operative dentistry was about to be placed upon a scientific basis. That we have taught that undeveloped teeth, like those of children, which need fillings at twelve years of age, are so lacking in mineral elements as to render the dentine a conductor of thermal changes, and electric currents, that nature's process of calcification is reversed, not only to cease adding to, but in some cases to take from, the lime salts already furnished. That is to say, that vital force is an agent active in highly organized teeth to hasten decay around metal fillings (gold in particular) even more, to withdraw or absorb lime salts to the devitalization of dentine, enlargement of cavities and loss of fillings. The May issue of the *Dental Cosmos* contains an article, in which all that has been claimed for dental progress up to now is considered a mistake, and we are astonished to find, according to that, there is no recognized law to govern a young graduate in the selection and adaptation of filling materials to conditions of the teeth. Quotation: "There is no basis for the selection and adaptation of filling materials to soft teeth, hard teeth, frail teeth (in structure,) or poorly-calcified teeth." I will further quote from the conclusions given in the article, to show that there is occasion for this writing. As the writer is held responsible for the introduction of the theory, which has often been declared to have no foundation in science, he feels it due the profession to know that the electro-chemical theory of dental caries has not been discussed upon the plane of animal existence, but upon the physical or chemical plane, and that figures have been produced upon the latter plane, which, in that relation, are correct, are made to apply to all the conditions relating to the subject, ignoring the basis upon which the vital theory is founded. Thus the confusion which has attended the discussion thus far. The following is quoted: "Caries of the teeth is not dependent upon any condition of the tissue of the teeth, but on conditions of their environments." In this the vital principle is denied.

Again: "The objects to be attained in filling teeth are the perfect exclusion of the causes of caries from the tissues by sealing the cavity and securing such form as will prevent lodgment of debris about the margin of the filling, and thus prevent the further action of the causes of caries." Here, too, the vital action of the pulp through the tissue is not counted a factor. Please bear this in mind. And, again: "There is no basis for the supposition that some teeth are too soft, or too poorly calcified, to bear filling with gold, or other metal in use for that purpose, since all are found to be abundantly strong."

Once more: "With our present knowledge, the only basis for selection and adaptation of filling materials to classes of cases is the individual operator's judgment as to which he can so manipulate as to make most perfect filling, considering the circumstances, his own skill and the durability of materials."

This brings operative dentistry back to the starting point of discussion twenty years ago. Not so with practice; no amount of figuring can set practice back a single year. I regret that this crisis has been forced upon us. From the first we have done all things possible to prevent it. Reconciliation has been impossible. No quarter has been shown, and according to the writings, the electrical theory is denied recognition.

Notwithstanding all this, its scientific principles remain with an increasing practical backing.

We are discussing science, and we might as reasonably expect a collision of planets as to be told by scientists that figures proved contrary results upon definite points of investigation. Science is a revelation from the Creator to the understanding of man, through matter and natural laws. The figures which have been given, and which are supposed to annihilate the electrical theory, are based upon the *physical plane.* The electrical theory and the matter under consideration is based upon *two planes above*, in the kingdom of vital existence. There is no connection of laws and forces between the two planes, except as they have been modified in their evolution from mineral compounds up to organic tissue. Every effort has been put forth to crush out the electric theory, mostly by pointed denials, stating that it is not scientific, and that there is no ground for it to rest upon. The law and conclusive contact seems unaccountable, but not unanswerable. It must have been an oversight. I cannot believe that it was intentional to mislead. Figures which are correct upon one plane have been used to overthrow a theory which has no relation to conditions under which the figures were obtained. Following this, without discovering the misapplication, the DENTAL PRACTITIONER AND ADVERTISER, after quoting conclusions from the *Cosmos*, triumphantly adds:

> "Now, what do our advocates of 'plastics for poorly calcified teeth' and 'gold only in teeth above the average in structure,' propose to do with these figures? They cannot be ignored, and must be met." The conclusions of their author regarding the 'adaptability' of filling materials, the proper 'electrical conditions' and tooth compatability are expressed as follows:
>
> "There must be a general abandonment of the idea that the teeth of any patient are so lacking in density as to interfere with any of the materials now in use.
>
> "And these conclusions came from a man who has made more real scientific experiment to determine the truth than all the advocates of the 'compatability' theories have ever performed, or would perform in a hundred years, if their average for the past decade is to be maintained.
>
> "What is to be done with these demoralizing figures? How are these confoundedly annoying demonstrations to be buried? They interfere with our 'personal comfort.' The paper was published in May last. Up to this writing there has been no response. Are we all paralyzed? Is there no chance for squelching this modern disturber of Israel? Must we have forced down our throats the unpalatable charge that the failure of our operations is due to our own carelessness or incompetence? If so, Heaven save us from ourselves. There is enough in the above to fill our pipes for a good long smoke, and it is hoped that the fumigation will soon begin."

The above editorial is given in spirit and language well calculated to provoke controversy rather than to preserve harmony. To answer the questions accordingly would not dignify a scientific discussion. To answer in brief:

"What do our advocates of plastics propose to do with these figures? They cannot be ignored and must be met." They should not be ignored. They relate to inert matter, and in that connection, they are correct and admitted. They will not be met with a collision, as desired, but will quietly pass by upon the freight track as inert matter. "How are these confoundedly annoying demonstrations to be buried? They interfere sadly with our personal comfort." We answer, bury them with the hatchet which has caused the discomfort, and there will be no more annoyance. It says, "The paper was published in May last. Up to this writing there has been no response. Are we all paralyzed?" Far from it. The trial against the electrical theory has been pushed for twenty years. It was summed up in the May *Cosmos*, and we have waited until the PRACTITIONER calls for a response, in substance this: have you anything to say why sentence of banishment from operative dentistry should not be pronounced upon the electric theory?

We beg leave to prove that the case has not been tried under the laws relating to it, and will go back to the first principles of matter which relate to elements; these establish primary laws and forces and carry them forward and up through the changes until they appear in vital tissue, on the plane of animal existence, where the case will be opened for a new trial. So far as books and authority go, we will use the best, and will quote from "The Conservation of Energy," by Balfour Stewart, LL. D., F. R. S., Professor of Natural Philosophy, at the Queen's College, Manchester, Eng.: "There are four planes of material existence, which may be represented as raised one above the other. These are: (1.) The plane of elementary existence; (2.) The plane of chemical compounds, or mineral kingdom; (3.) The plane of vegetable existence; and (4.) The plane of animal existence. Their relation to each other are truly expressed by writing them one above the other, thus:

4. Animal.
3. Vegetable.
2. Mineral.
1. Elements.

"Now, it is a remarkable fact that there is a special force whose function is to raise matter from each plane, to the plane above, and to execute movements on the latter. Thus, it is the function of chemical affinity alone, to raise matter from plane No. 1 to No. 2, as well as to execute all the movements back and forth by action and reaction; in a word, to produce all the phenomena on No. 2, which together constitutes the science of chemistry.

It is the prerogative of the vegetable life force alone to lift matter from No. 2 to No. 3, as well as to execute all the movements on that plane, which together constitutes the science of vegetable physiology. It is the prerogative of animal life force alone to lift matter from No. 3 to No. 4, and to preside over the movements on this plane, which together constitute the science of animal physiology. But there is no force in nature capable of raising matter at once from No. 1 to No. 3, or from No. 2 to No. 4, without stopping to receive an accession of force of a different kind on the intermediate plane. Plants cannot feed upon elements, but only on chemical compounds; and animals cannot feed on minerals, but only upon vegetables, or that which has been raised above vegetables."

These facts have not been considered in the conclusions, as all are based upon the physical plane. Let us follow the laws up from one plane to another, and see the changes there is in matter as we ascend. Chemical force unites elements and chemical compounds are the results, which embrace everything below organic compounds. This is the physical plane; here we are taught physics, chemistry, and electrolysis, as well as other forces, cohesion, chemical affinity, etc. The principles taught by the galvanic battery and its current, and the electro-plating bath, we take up to the plane No. 3, vegetable physiology. Vital force touches chemical compounds, and vegetation springs up from the lichen to the mighty forest trees, with all intermediate productions calculated to support animal life. The galvanic battery also has been organized. One pole has been located in the foliage and the other in the rootlets of the tree or plant, and a to-and-fro current passes through the stem or trunk, while the plating fluid, this plane taken, is the sap which contains all the organized elements requisite for the growth of the vegetable.

Again, vital force comes from above and touches organized matter; animal life appears from microbes to man; the latter is given will power. Man is a cosmos. The body contains organs, conductors, currents, elements, nutrition and vital intelligence, sufficient to care for each and every part of the body, to build or take down any of its tissues. To bring up our variable laws from the vegetable plane, what was foliage re-appears in the *lungs* for breathing; digesting of minerals by chemical action of the rootlets appears in the stomach. The sap appears as blood, which contains all the material needed for growth and support of the system. Each organ is endowed with intelligence and force to convey material to and from points under its supervision. The oral cavity is the receptacle in which food is ground, insalivated and prepared for the stomach. The oral cavity is the only vital laboratory in which chemists are allowed to work, and the only instance in which scientists insist upon vital tissue living upon elementary food. This is done when sensitive teeth are filled with gold without protection.

Vital currents act upon organic matter on the blood or secretions, the same as physical currents do upon metals in plating, as it is known that the reversal of a current undoes the plating and transfers it to the negative pole, which before was positive.

So thought influences these currents. Thought causes blood to fill the brain. Shame brings a flush to the face. The thought of eating a lemon causes the saliva to flow to neutralize the anticipated acid, etc. Exposure of the body to cold, the change of a collar, cutting of the hair, sitting in a draft, etc., is often the occasion of a cold. This is merely the reversal of the vital current which brings the exposed parts to an abnormal condition. When an undeveloped tooth, that is one not fully calcified, is filled while sensitive, the same reversal takes place.

In teeth there are two conditions, attended with different results. When teeth have received sufficient lime salts to render the dentine a non-electrolyte, or a non-conductor of thermal changes, this occurs; the surface of dentine in contact with the metal becomes inert matter, and serves as a protector of the vital tissue. The vital force in tissue works up to the dead line to complete calcification as it would against enamel.

When the dentine is poorly calcified, devitalization goes deeper; there not being sufficient mineral matter to protect the organic, the latter decays. Nature does not repair or resist the encroachment of decaying tissue, and quite frequently the pulp takes back lime salts from dentine beneath gold fillings which seem perfect, and which have done service for years, when inflammation of the pulp demands removal of the filling, and it is found that only the organic portion remains as a protection. I have seen cases in which all the teeth were breaking down from this reversal of the vital current. While I have not recommended the heroic treatment, there are cases where devitalization of the pulp would correct the difficulty. This derangement of nutrition is manifest in several ways. Change of climate, long sea voyages, etc., are evidence of the same principle. Ptyalism from effects of mercury is a manifestation of systemic polarity. Nature disapproves of an element.

Let us apply this principle to the absorption of the roots of deciduous teeth, which is a vital process. By pressure directly upon the end of the root the current is reversed and the material is taken away, or from one side of the root where the pressure is in that direction. The surgeon bandages a limb or part to cause absorption. Iodine is used for the same purpose.

Thus it may be seen that a gold filling in contact with highly organized dentine strikes a chill to the tissue by a breath of cold air, or cold food, or cold drinks. In young teeth lime salts seem to be withdrawn and caries follows. Time forbids touching practice or proving statements by practice. I will only add that gold may be adapted to the conditions of poorly calcified teeth by insulation, by the use of chloral balsam, paraffine, etc., which exclude moisture, prevent thermal change and allow nature to proceed with calcification. This is the adaptation of materials to conditions.

Gentlemen, the doctrines which we have set forth are not of modern discovery, as may be seen by the closing sentence of a paper which I read more than a score of years ago. "What I have presented may not be new to you. To me much of this knowledge is the teaching of a 'still small voice,' communicated through the magnetic needle—an expression of a force manifest in heat, light, motion, magnetism, electricity, chemical affinity, life, and the imagination adds, Divinity." It had required years of observation and study to obtain the principles given in that early day. Of one thing I am certain, and that is that this advance doctrine could not have come from any other profession or occupation than dentistry. The oral cavity is the only laboratory where minerals and metals are daily brought in contact with vital tissue, and my excuse for the persistence in bringing this matter before the profession is, that circumstances placed me in a way to gain just this knowledge, which perhaps has never been forced upon another, and which I believe it is my duty to give the profession.

In 1847 I commenced wearing a silver plate upon which were mounted nine teeth. Having previously become somewhat acquainted with galvanism and electricity from private study, my study of oral electricity began with the wearing of the plate. I soon learned that foods of various kinds produced galvanic currents disagreeable or otherwise, but still unnatural. Sulphur in eggs, the smoke of gunpowder, which in addition to sulphur contained carbon and niter, was quite as perceptible by taste as by odor. The same in breathing through the mouth near sulphur springs. Carbon, while it is yet vegetable, as in coffee roasted, broiled meat, bread toasted, griddle cakes, etc., all communicated to the plate and gave a metallic taste; nor was this all taste, but a sensation communicated through the metal, disagreeable in silver, natural in gold, lacking always in rubber.

Another lesson was to allow the surface to become oxidized or sulphurated, which almost overcame the action. This was a help to patients, as rubber was not then in use. In time gold was substituted for the silver plate, which was a decided improvement over the latter. Gold being a negative element, the action was changed from the plate to the positive elements in contact with it. Gold becomes charged with electricity during contact with food, which is positive or easily decomposed. The greatest objection to gold dentures as formerly made, was the difficulty in cleansing; such plates should not be worn. The next experiment was with rubber, which was very unsatisfactory on account of heat, it being a non-conductor, which also prevents taste much more than metals. These are points to be gained by actual study, by comparison in the mouth. My observation led me to conclude that there was no difference between red and black rubber on account of non-conductivity, which is the main cause of spongy gums. Then came an aluminium swaged plate with rubber mountings, which is by far the most comfortable and natural-feeling plate I have worn. Cast aluminium had a more severe trial, as it came in contact with two bridges worn below, occluding with the aluminium caps which covered a molar on either side for the purpose of increasing the bite. The plate was inserted and I noticed a metallic taste, but thought it might pass away. On going upon the street in the evening I noticed that all the lights were remarkably unsteady, annoyingly so, but soon learned that it was caused by closing the jaws. The shock which I had not noticed before became visible or perceptible through the optic nerve. The gold, as it does in all mouths, stands at a potential higher than the positive elements in the mouth. On closing the circuit the running down of the potential caused the twitching of the nerve, and thus the apparent flickering of the lights. Removing the caps and substituting rubber corrected the trouble. Still, cast aluminium worn with gold gives more galvanic action than rolled plates. I know that it is not right to wear an upper and lower plate of different metals, except gold and platinum. Many experiments have been made that no one not in the study of the mouth would have thought of. A molar which was clasped with gold had a coronal cavity nearly in the center. This was filled several times. Being surrounded with sound enamel, there was no danger of decay. A gold filling produced no sensation when the tongue bridged from filling to clasp, or when it came between the bridge below and the filling. An amalgam filling gave a decided current. Copper amalgam was tested, and for a time was altogether the most disagreeable, but in a few months it turned black and became tasteless. This filling was all right when the tooth was extracted on account of absorption of socket. It was clasped and supported a plate forty-one years. The above are some of the lessons learned from nature direct, and to me they have become so scientifically correct that no figures upon experiments made on the chemical or second plane can set them aside. They amount to positive knowledge.

Now, let us take a stand upon the vital plane No. 4, where operative dentistry belongs, so far as the treatment of normal vital teeth is concerned. And here we have only kind words for "this modern disturber of Israel." As the article states, the investigations relate to the physical properties of the teeth, and are as correct as it is possible to obtain. The vital principle of the teeth seems to be ignored, as the quotation shows. "Caries of the teeth is not dependent upon any condition of the tissues of the teeth, but upon the conditions of their environment." When teeth are extracted, that moment they become inert matter and belong to the physical or chemical plane. Crowns of pulpless teeth in the mouth, and those that have done receiving nourishment from the pulp, also come under the line of investigation so laboriously performed and scientifically set forth. All other teeth from infancy to old age are vital organs, in proportion as they receive vital support and circulation, and they belong to the fourth plane. From first to last investigators have left this vital distinction out, and by making the laws which are limited to the physical plane cover the whole ground, leaves nothing for the vital principle to stand upon. The motive for doing this I cannot discover. The greatest mystery is that it is done by the acknowledged leaders in the profession. This is the part that I most regret. After having failed to have this oversight corrected, so as to preserve harmony, a crisis has been reached, and we were compelled to make the above statement. We remained silent and the taunting question was put: "Are we all paralyzed? Is there no squelching this modern disturber of Israel?" If these conclusions gave us any practical benefits above our present attainments, it would be to an advantage; but no, as has been previously stated, the object has been to show the fallacy of the teaching which is followed by many operators.

Please note the principles we claim as beneficial to operative dentistry upon the animal plane. Trusting that the distinction has been plainly given, we will deal only with teeth in a condition in which they are nourished by vital forces through the pulp or pericementum. Since the age of twelve years has been mentioned, let us take the average teeth in that condition, which will also apply to any age, according to their vitality. The first conclusion we notice is this: "There is no basis for the supposition that some teeth are too soft or too poorly calcified to bear filling with gold or other metal in use for that purpose, since all are found to be abundantly strong." Again: "There is no basis for the selection and adaptation of filling materials to soft teeth, with our present knowledge. The only basis for the selection and adaptation of filling materials is the operator's judgment as to which he can most perfectly manipulate."

In answer to the above, I think that the majority of operators will call such teeth soft and poorly calcified. We will still use those terms upon the vital plane. It is impossible for me to harmonize the conclusion that there is no basis for the selection and adaptation of the filling materials, etc. "With our present knowledge the only basis for the selection and adaptation of filling materials is the operator's judgment as to which he can most perfectly manipulate." This is the hardest blow ever dealt to dental progress. It admits that operative dentistry is not a science, that there are no known laws by which to adapt filling materials to the conditions of the teeth. It gives license to the young graduate to gratify the highest ambition of every enterprising young operator to do gold filling whenever a tooth would seem to stand the operation, only to find to his sorrow and to the patient's loss that a mistake had been made.

Twenty-five years' experience on the Dental Examining Board of the Dental Society of the State of New York, and sixteen years of Registration for six counties in the State, has afforded knowledge of the teachings of various colleges throughout the State, as well as the understanding of graduates bearing upon this subject. With the schools, as with practice, there has been evolution. At first but a single college ventured to brave the criticism resulting from the teaching of this heretical doctrine; others have cautiously taught liberal ideas as practice led and gave support. Notwithstanding, if graduates can be relied upon, many schools are impressing their students with the falsity of the electric theory.

The most charitable allowance for opposition by investigators would be that they do not comprehend the laws and forces upon the plane of vital activity. This seems evident from the fact that the author of the article twice alludes to constitutional causes, but in a manner to act upon the environments of the teeth through saliva rather than from within, when in fact both agencies are at work at the same time. I believe that if the author had made his investigations from the chemical standpoint, together with the electro-vital experiences which have been forced upon the writer, that operative dentistry would now be standing upon a scientific basis, and dental schools would be teaching laws and principles which would enable graduates to see the end from the beginning of their operations, rather than to be told to rely upon their own judgment without experience to guide them, which would be a decided gain over the claims of the author, quoted as follows:

"The greatest good that I could expect to come from this laborious investigation (except as it may effect the future study of the caries of the teeth), would be the general abandonment of the idea that the teeth of any patient are so lacking in density as to interfere with reasonable filling operations with any of the materials now in use." Thus the effect seems to have been put forth to destroy a theory without substitution. It seems time now that the coming investigators who have been watching the outcome of the electric theory, the microbic theory, the physical theory, come to the front and do some independent thinking for themselves and the profession. I am positive that great good will grow out of this occasion.

To recapitulate: Chemical force raises elements to the second plane, which is the plane of chemical compounds under the control of physical laws and forces. Vital force raises chemical compounds to the third plane, which is the vegetable kingdom. In this kingdom the matter is organic, and is under control of vital forces which act upon organic matter upon this plane. From the third plane animal force raises organized compounds up to the fourth plane, which is the plane of animal physiology. Man stands upon this plane, a cosmos. In him are incarnated all the elements and forces found in the body. All have been lifted up by a force or power from the plane above. Man has vitality, thought, will, sensibility and action. These endowments control his system, and the various organs of the body perform their functions under vital direction, involuntary or voluntary, as the occasion or circumstances demand. All the matter in the body proper, or the food which supports it, has been so organized as to be under vital control.

Here we search our book in vain for further knowledge, and here, too, investigators bring up physical forces from the chemical plane, and by them condemn vital action.

To illustrate: Many years ago the highest recognized dental authority in the world proved to the profession that a tooth was not an electrolyte, because it is a non-conductor and could not be injured by a gold filling, and that settled the matter for all subsequent investigators. Now comes up an array of figures from the same plane, and the conclusion from their teachings seem to have settled the annoying question in the mind of another defender of operative dentistry against heretical doctrines, and he exultingly remarks: "Are we all paralyzed? Is there no chance for squelching this modern disturber of Israel?" Could he have forgotten that "there is a God in Israel?" I know in whom and in what I have trusted, and regard this as the brightest day in the history of operative dentistry.

We again call up the human body and apply our organized laws and forces to the teeth, and, to be charitable, will divide with the opponents of our theory, giving to the latter all teeth that have been extracted, pulpless teeth in the mouth, as well as those from which for any cause, either by age or abnormity, have lost vitality or pulp nourishment. This class belongs to the second, or physical plane, upon which the experiments were conducted, and with which they agree in the mouth with the conclusions as claimed by the figures. The other class includes the vital organs, in which the pulp and the tissue are in a normal condition.

To abbreviate: I will take for an illustration the teeth of a child, although the same principle applies to all this class of teeth, according to their organic construction. Each tooth is a vital body, a part of the whole system. It has a pulp, which is supplied with material to furnish the tissue with all that is required to make a normal tooth. It also has vital force like other members of the body, which take the material to and from the parts according as vital energy directs. We understand that an exposure of even a small portion of the body will produce a cold, perhaps neuralgia, which is a reversal of the vital current, causing an abnormal condition.

We understand that a metal filling when placed in contact with vital tissue also reverses the current. Nature will not convey lime salts to a point of contact with metal. There will be a lamina of dead matter in thickness according to the conductivity of the dead tissue. In normal dentine, and even in the more highly organized, this devitalized lining will prove a protection, and the process of calcification go on under the cover, but when the organic matter is so great as to allow fluid circulation, chemical action ensues and caries is the result. The tissue becomes an electrolyte under the laws governing the action upon the vital plane. What is understood by the adaptation of filling materials to the condition of the teeth is this:

Nature will not tolerate the repeated shocks or thermal changes produced by metal in the teeth where lime salts are being deposited. Plates may be worn, or crowns upon roots, in which case there is no calcific process going on; but thermal changes produce an abnormal condition, with results as described.

When there is a liability that such changes will take place, a non-conducting filling like gutta-percha, a lining of chloro-percha, or chloro-balsam, or some oxide, will allow the process of calcification to proceed. This is the adaptation which is rejected. Not only does this principle apply to the teeth, but to the whole system. Constitutional effects of mercury change the natural potential of the system, and ptyalism is the result; the whole secretions become changed. Change of climate, altitude, sea air, etc., all come under the same laws for benefits or injuries, according to conditions.

There can be no progress in etiology of dental caries so long as investigations are based upon the physical plane. The study must be conducted by observation of vital forces upon matter, the plane where man lives, moves and has his being. Then there will be harmony with cause and effect. Then we can understand how vital force controls organized matter. Also, that constitutional changes through vital circulation in the tissues is as truly a dyscrasia as gout or rheumatism."

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SOME PRACTICAL POINTS IN PORCELAIN WORK.

BY DR. A. C. McALPIN, WARREN, PA.

Read at the Twenty-seventh Union Dental Convention of the Sixth, Seventh and Eighth District Dental Societies of the State of New York, held at Binghamton, Oct. 29, 30 and 31, 1895.

It is not the purpose of this paper to give, in elaborate detail, a description of all the operations possible in what is specified as porcelain work, but simply briefly to review some of those practical operations which have come within my experience during the past five years. Porcelain work well done, is very durable and artistic in appearance; done badly, it is more apparently discreditable to the operator than any other class of work in operative dentistry.

A conspicuous and radical fault found in porcelain operations is the carelessness with which colors are selected, the universal tendency being to choose too light and too yellow shades. The operator, disregarding the habits of his patient with regard to his teeth, selects porcelain facings and fillings to match the newly-polished, or dry teeth, when oftentimes he well knows that the patient will allow the teeth to lapse into the old condition, and that the porcelain will not gather a like deposit with the natural teeth. A highly glazed porcelain facing on a crown should rarely be left. It may be remedied by deadening the surface with sandpaper disks, and polishing with buff and pumice. In porcelain fillings the color of the cement used as the retaining medium influences the shade, and care must be taken in its selection.

The experienced operator in porcelain work will abandon small approximal fillings, and confine himself to labial fillings, conspicuous corners, and tips on teeth eroded, or worn to cup shape. A porcelain filling involves the preparation of the cavity in such a way that the matrix can be easily withdrawn, without affecting its shape, and the completed filling can be inserted. Very acute marginal angles in the fillings should be avoided. The use of separators enters largely in the successful insertion of approximal fillings, and simplifies an operation when many times it would seem impossible to insert the filling with a sufficient body to it for anchorage.

To form a porcelain filling, take platinum plate of a gauge as thin as it is possible to use without tearing, anneal it to white heat, cool and place it over the cavity, forming a matrix by pressing it to the walls with cotton pellets, rolled hard, rubber points and burnishers, and getting the matrix well defined by burnishing it to the marginal lines and over the surface of the tooth around the cavity, the latter to stiffen it and facilitate handling. Then fill the matrix with porcelain body to match the natural tooth, and fuse. Remove the platinum, make slight retaining grooves in the body of the filling with a diamond disk, these grooves to abut as nearly as possible upon similar ones made in the side walls of the cavity. A mere scratch in labial cavities will suffice. Then dry the cavity and filling, and insert with a thin mixture of cement, cover with sandarac, and allow to set well before removing the surplus cement. Extreme care should be taken that the marginal lines should be so perfect that subsequent grinding on them will be unnecessary. In filling cervico-labial cavities, pink porcelain body can be used to take the place of gum tissue, lost through recession. In large corners and tips, oftentimes short double-headed pins should be made and used, one head in the filling, the other as an anchorage button in the cavity.

The operations next described are those in which porcelain work is most valuable. In these the jacket crown is used. Teeth that have been repeatedly filled with metals and have as often failed, can be restored to their natural appearance and use without disturbing the living pulp. When the natural crown has decayed beyond the metal filling, and the tooth is yet alive, or the crown is undeveloped, or is irregular in form, or twisted in its socket, or slightly out of position, or worn away by friction or erosion, it can be crowned and regulated without sacrificing the pulp, and with a crown whose facing has the firmest attachments throughout its entire palatine surface, thus making the strongest porcelain-faced crown known. These crowns are so constructed that easy access to the pulp in direct line with the root canal can be had in case of subsequent trouble. They are commonly used only on the twenty anterior teeth, as gold crowns are usually practicable for the molars. The crown is made as follows: Reduce the natural crown to a size which will admit of a twenty-eight American gauge platinum plate over the entire palatine and approximal surfaces, and a twenty-two gauge porcelain facing. Obliterate the cervical ridge, then fit the cervical circumference of the stub with a thirty gauge platinum cylindrical tube (in making which, lap the metal ends a little), solder this with pure gold, using as little as possible, place the tube on the stub, mark it on a line with the palatine surfaces of the approximating teeth and gums, and grind the tube inside the lines with a dry stone, to such thinness that it can be burnished to the stub without affecting the cervical adaptation. Then solder to this surface, with pure gold (using as little as possible), a twenty-eight American gauge platinum plate, *this* to form the entire palatine and about half the approximal surfaces of the crown. Then mark and grind the labial surface of the tube and adapt to the stub by pressure, without burnishing. Use for this an old amalgam serrated plugger, that the ground surface may remain rough for the adhesion of the porcelain, then grind the back of the veneer facing so that, when placed on the shell, it will be in the position required when finished. All platinum surfaces to which porcelain body is to adhere, should be roughened with a dry stone. Remove the shell from the stub, heat it to white heat, to cleanse and prevent carbonation, which might discolor the facing, and place the facing on the shell in correct position, with the porcelain body between, and dry well before baking. Bake to a slight gloss only on the porcelain body, cool slowly and finish the same as in Richmond crown work.

In attaching a bridge tooth to a jacket crown, allow the heavy palatine backing to extend across the space to be filled, roughen its labial surface with a dry stone, curl the edges slightly to stiffen them, and proceed with a facing as in the jacket crown.

For longer bridges, the jacket minus the porcelain can be made, but with pins attached to the labial surface, the bridge teeth soldered to them as in ordinary bridge work. The facings can be put on the shells by the method explained, in the attaching of a cup facing. For replacing a lost facing from a bridge, which is broken, burnish a thirty-two-gauge platinum plate to the bridge backing, with holes to allow pins to go through the plate, solder to this with pure gold, (using as little gold as possible) two tubes of platinum made to fit closely over the pins. Attach to this the old facing or a duplicate, in the same manner as in attaching the facing to the jacket crown. Cement this on and you have a permanent repair without the trouble of taking off the bridge.

To those aggressives who, with impunity, knock out the nerve and never never lose from subsequent trouble more than the old original two per cent., this jacket crowning will seem superfluous, but to those "meek and lowlies," who advocate the preservation of the pulp whenever possible, and wish to be free from the two per cent. mortality, and at the same time wish to feel the satisfaction of doing better work, this method of crowning will commend itself.

Some other practical uses for porcelain work may be found in fusing pins or porcelain buttons on blocks, repairing cracked blocks, contouring teeth and portions of gum sections, making two blocks continuous, coloring teeth with mineral stains or bodies, to match anomalous shades, painting gold fillings on artificial crowns, etc. In post crowns, perfect adaptation to the root with porcelain can be had by fastening the screw post in the root first, and proceeding as in the attachments of a cup facing, making the entire crown with the exception of the veneer facing, of the porcelain body.

Porcelain work enters largely as an aid in orthodontia, and a little experience in the jacket and bridge work will enable the operator to discern those cases in which it can be used.

I trust that the discussion of this paper will clear any ambiguous points and bring out those necessarily omitted by its brevity.

FIRST PERMANENT MOLARS.

BY W. E. MARSHALL, D. D. S., BUFFALO, N. Y.

Read at the Twenty-seventh Union Dental Convention of the Sixth, Seventh and Eighth District Dental Societies of the State of New York, held at Binghamton, Oct. 29, 30 and 31, 1895.

Mr. President and Gentlemen:

If you do not all agree with me in deeming these the most important members of the dental family, you will at least give your consent to the proposition that they claim more of our thought and anxiety than any others. As their importance is so well understood by every reputable practitioner, I feel that it would be out of place for me to enlarge upon that part of our theme before this intelligent assembly. If, however, we can, by a free discussion of the subject, gain a little more light on one of the most perplexing questions of our everyday practice, or come a little nearer to an agreement as to the best method of preventing what we all deplore, the prevalence of caries in these teeth, or of staying its progress and repairing its effects, I feel that our time will not have been spent unprofitably.

As the greatest requisite in combatting and eradicating any disease is a thorough knowledge of the circumstances which produce it or favor its progress, let us first consider some of the causes of this trouble, and the best methods of overcoming them. All will agree that neglect, born of ignorance and indifference, is the first and greatest of these.

That "knowledge is power" is most forcibly demonstrated here, for how frequently are we hindered in our best endeavors, by the ignorance manifested by such expressions as "I did not know they were permanent teeth;" "I never thought it was necessary to fill the temporary teeth;" or, "Pull it out and have done with it; it doesn't matter much back there anyway." How often are we discouraged by such evident lack of knowledge, and still more by the stolid indifference sometimes manifest when we have done our utmost to explain the necessity of preserving both the deciduous and the permanent teeth. But we must continue to explain and to impress these things upon the minds of our patients, and the reward of our honest endeavor will come, probably in greater degree to our successors in the profession than to ourselves, but come it surely will.

When, however, we have in this way done all in our power with individuals, we will have accomplished but little toward the education of the masses. The study of dental physiology and hygiene in our public schools would do much to improve these conditions in future generations, but to reach the people whom we should reach, I should be much in favor of some such plan as that outlined in Dr. Warner's paper, published in the *Cosmos*, of January, 1893, in which he advocates the appointment of an educational committee in every dental society, whose duty it should be to prepare for the public press interesting and instructive articles on dental matters, so keeping the subject before the people as, at least, to leave no excuse for the ignorance now so prevalent.

While we give due consideration to physiology and hygiene, we should not neglect diet and exercise as important factors in the development of the teeth, and worthy, I think, of more attention than they receive from either the profession or the laity. The first molars are developed at a period when the demand for bone-producing elements in the system is greater in proportion to the supply than at any other, and unless these elements are forthcoming in sufficient quantity, the teeth are sure to suffer, since nature supplies first those parts which are of more vital necessity, the bones of the skeleton. We, as a people, are prone to eliminate from our food products those parts in which are stored, in greatest quantities, the elements flourine and calcium, so necessary in the formation of good enamel and dentine. Children should be encouraged to eat such food as contains the bone producing elements in the best proportions and in the best form for ready assimilation, prepared in such a manner as to require thorough mastication.

It is a law of the animal kingdom that an organ unused loses its function, and deteriorates or disappears entirely; so if man should cease to use his teeth, he would soon become edentulous. If the deciduous teeth are made to perform a reasonable amount of work, a demand for tooth tissue is created, the functions which supply it are stimulated, and much good results to the developing first molars, and, indeed, to the whole permanent denture, while the more thorough insalivation and the more perfect digestion and assimilation of the food which result benefit the whole system.

A better appreciation of the value of the first molars, and a more thorough understanding of all the circumstances which influence them in their struggle for existence, would beget in parents a more intelligent interest in their care, and greatly facilitate the preservation of them. Children would be taken to the dentist in good time, and his services could be rendered with much more satisfaction, both to himself and to his patients.

A few general rules, together with the operator's enlightened and conscientious judgment, influenced, of course, by the ability and willingness of the parent to pay for the work, must be our guide in deciding when and how we shall endeavor to preserve these important organs. As a rule, they should always be retained in position until the eruption of the bicuspids. Then, if their structure and their tendency to decay seem to predict their loss within a few years, their removal before the eruption of the second molars is advisable. We so frequently see good results from their extraction before the eruption of the second molars, as compared with the disastrous results of their removal after that period, that we deem it a safe rule, where there is not a probability of preserving them permanently, to extract before the twelfth year, while subsequent to that period every effort should be made to preserve even their roots.

Having decided that the teeth should be preserved, the operator must use his own judgment in the adoption of methods and the selection of materials. Gutta-percha and oxyphosphate seem to give the best results where the tooth structure is poor or the decay extensive, while in other cases gold and amalgam are preferable. Even when badly decayed, with pulp almost exposed, these teeth may still be preserved by thoroughly sterilizing a portion of the decayed dentine to be left for the protection of the pulp, and filling the cavity with gutta-percha or oxyphosphate, after coating it with an impenetrable varnish, or placing over the nearly exposed portion a wafer of temporary stopping. Sterilization is best accomplished by thoroughly drying the dentine, and sealing in the cavity for several days a good germicide, such as a paste made of zinc oxide with creosote and oil of cloves, placed in a depressed disk of tin and inverted in the cavity. If successful in saving the pulp we can fill more substantially later on.

The models presented show plainly the evil results of extraction of the first molars after the eruption of the second. These are the models of the denture of a young lady, three of whose first molars, perfectly sound, were extracted when she was thirteen years of age. The reason given for their removal was that otherwise there would be no room for the wisdom teeth. In this case only one of the spaces has been filled, while the occlusion on the right side has been ruined. The best masticating surface is the lower left, where the first molar was allowed to remain. True, the third molar has not erupted here, but we do not know that it would have been had the first been extracted, and if it had, we have little reason to believe there would have been a good occlusion. The crowding of the anterior teeth has not been remedied by the operation. Here we have permanent spaces created, masticating surfaces sacrificed, occlusion sadly deranged, and no benefit resulting, even to the crowded anterior teeth. Had those teeth been decayed, much good would have resulted from the preservation even of the roots on the right lower.

The disaster resulting from the loss of a tooth is not merely in proportion to the amount of masticating surface sacrificed, but depends on the derangement caused in the remaining teeth.

We may classify cases and lay down general rules, but when we come to practice we must deal with individuals and not with groups; we must study and determine the fine variations of each case, and adapt treatment accordingly, and our success will be in proportion to the skill and judgment we exercise in such adaptation.

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LOCAL ANÆSTHETICS AND OBTUNDENTS.

BY DR. F. J. WOODWORTH, ROCHESTER, N. Y.

Read at the Twenty-seventh Union Dental Convention of the Sixth, Seventh and Eighth District Dental Societies of the State of New York, held at Binghamton, Oct. 29, 30 and 31, 1895.

The general method employed in the use of a local anæsthetic for extraction is by means of hypodermically injecting the agent into the tissues surrounding the root, by the applying of the agent to the gum for absorption by means of pledgets of cotton or other vehicle, or by the use of a low volatizing refrigerant directed in a continuous spray upon the gum.

A few of the refrigerants, such as the bromide of ethyl, chloride of ethyl, chloride of methyl and sulphuric ether, are used with apparently good results, but owing to the rapid circulation in the parts the hypodermic is more effective.

The use of electro-magnetism has also been employed to a limited degree, but the consensus of opinion is that in no case was local anæsthesia produced by its use, but that the small benefit derived was due more to the diversion of sensation.

As it has not been demonstrated satisfactorily, either microscopically or theoretically, that the dentine is traversed by nerve fibers, and as the present generally accepted theory is that the dentinal tubuli are filled with protoplasm capable of transmitting sensations of irritation to the odontoblasts which have direct connection with the terminal fibers of the sensory nerve, all successful obtundents of sensitive dentine must either remove the contents from the dentinal tubuli and place some indissoluble material in its place, owing to the dentine being hygroscopic employ an effective coagulant to the albumen contained in the protoplasm, or reduce the temperature of the protoplasm sufficiently to freeze it temporarily in the tubuli.

As the protoplasm is composed of a large percentage of moisture, the best method to employ in removing it from the dentinal tubuli is to use some substance which has a great affinity for the moisture. Undoubtedly absolute alcohol is the best agent. After isolating the tooth, thoroughly dry the cavity with absorbent cotton and apply the alcohol in connection with heat from a hot bulb, as it will assist its chemical affinity for the moisture. In its vaporizing, the alcohol carries away the moisture of the tubuli. Next place a resinous gum well diluted by alcohol in the cavity, which will readily be taken up by the empty tubuli. You will now find that the field of non-sensitive dentine will extend only as far as you have been successful in substituting the foreign substance for the protoplasmic contents of the tubuli.

Undoubtedly the best method employed to coagulate the albumen contained in the protoplasm is by isolating the tooth, and after thoroughly drying the cavity applying carbolic acid. If the sensitiveness is at the cervical border or caused from mechanical abrasion, the stick form of argentic nitrate will be found most convenient. After applying the carbolic acid, possibly better results may be obtained by following with the crystals of chloride of zinc.

In the employing of the refrigerant process, the object hoped for is to sufficiently reduce the temperature of the protoplasm to render it impossible to transmit sensation to the periphery ends of the sensory nerve. This process dates back to 1888, when the sulphuric ether spray was introduced, followed by the nitrous oxide and ether combination, which was objected to, owing to the cumbersome apparatus necessary for its use. Rhigoline, chloride of methyl and bromide of ethyl, have followed each other in rapid succession, and at present the chloride of ethyl is having its day.

It will be observed from the foregoing that the function of the sensory nerve can be completely suspended temporarily only by the complete removal, coagulating of the albumen, or freezing of the contents of the dentinal tubuli, but as it is only possible to do this to a limited degree, the process employed must be repeated after removing the dentine already acted on.

The practice of filling sensitive cavities with oxyphosphate cements for the purpose of obtunding the dentine, has met with but little success in my hands. The best results by this method have been observed a few days after the introduction of the filling, as the sensitiveness seems to return at a later date.

If you desire immediately to extirpate the pulp, thoroughly dry the cavity and apply the cocaine, or use the chloride of ethyl spray, but if it is possible to give your patient an early appointment, make a free exposure of the pulp and apply a paste of equal parts of arsenic and antifebrin, as the physiological action of the latter in diminishing blood-pressure relieves the acute pain by reducing the congested condition of its blood vessels, or use the arsenic in combination with the sulphate of morphine to lessen the extreme painful action of the arsenic.

Mental suggestion is being employed to a greater degree than some are aware of, but owing to the small percentage of persons who can be controlled and the general public sentiment against its use, it undoubtedly will never become a popular method.

At present the dental journals are filled with articles and advertisements of local anæsthetics of unknown composition.

Because certain persons present a marked idiosyncrasy to many drugs, and especially to cocaine, which cannot be foreseen or guarded against, the only safe way for the dentist is to use such preparations as he is perfectly familiar with, and knows the components and action of, so as to be prepared to administer an antidote intelligently if it becomes necessary. For hypodermic injection in extracting, I am at present using:

Alcohol,	ʒ vij
Glycerine,	ʒ x
Carbolic Acid,	gr. x
Camphor,	gr. ss
Atropine,	gr. ii
Cocaine Hydro,	gr. vii
Nitroglycerin,	gr. i

In this preparation the alcohol is used as a diluting agent, and in combination with the nitroglycerin constitutes a powerful cardiac stimulant.

The glycerine in all anæsthetics is employed as a solvent to hold the cocaine in solution with the oils of the mixture, and to keep the cocaine from deteriorating.

The carbolic acid acts as a coagulant and powerful escharotic agent to circumscribe the action of the cocaine, while the camphor modifies the action of the carbolic acid.

The atropine counteracts the toxic effect of the cocaine. In its place, equally good results may be obtained by the use of antifebrin, gr. xx, or possibly menthol, gr. xxx.

In considering antidotes for the different anæsthetics and obtundents employed, undoubtedly nitrate of amyl, so far as experience goes, is the best, as the cautious use of the drug is safe, even when there is severe organic cardiac disease. The best method of administering this very volatile liquid is by the small glass pearls containing five minims, which can readily be crushed in a handkerchief when wanted for inhalation.

In the use of a hypodermic anæsthesia, care must be exercised not to pierce a large blood vessel, as thrombosis or embolism may result.

Knowledge of the location of the large nerve branches of the part is essential, so as to avoid paralysis of the part from the severing of the nerve supply.

Never use a solution of cocaine in the soft tissues, unless it is used in combination with a coagulant or escharotic of sufficient strength to circumscribe its action.

Do not use a solution of cocaine stronger than two per cent., and always keep your antidotes handy for an emergency.

COCAINE.

BY E. J. HAUSLE, D. D. S., BUFFALO, N. Y.

Read at the Twenty-seventh Union Dental Convention of the Sixth, Seventh and Eighth District Dental Societies of the State of New York, held at Binghamton Oct., 29, 30 and 31, 1895.

It is not my wish to inflict upon you a complete history of this drug, because you are already quite familiar with it, as its use is of daily occurrence to most of us. The tendency of dentists is not towards diligent study, and the habit of recording observations if only those of the unusual kind is not as common as it ought to be. By way of refreshing our memory let us turn back to the history of cocaine for a few moments only.

When Peru was taken by the Spaniards, the inhabitants were observed to be particularly fond of a certain shrub; in fact, quite dependent upon it, They regarded it as the heavenly tree which satisfied the hungry, strengthened the weak, made man forget his misfortunes, and they consequently almost worshiped it. The rude invaders forbade its use, claiming that it was a weak people who demanded artificial support. The discontinuance of its use by law, caused an alarming amount of sickness and other infirmities, with so many deaths, that the cultivation of the shrub was again ordered.

The alkaloid is obtained from erythroxylin coca, which grows to a height of six to eight feet, having numerous branches. It is raised in damp, warm valleys of Peru, Bolivia, Colombia, Brazil, and the Argentine Republic, at an altitude of 5,000 to 6,000 feet. Three times a year the leaves are collected with the greatest of care, so as not to injure them. After being carefully dried in the sun, the leaves are packed in certoes of 30 pounds each, and are shipped or exported to London, the wholesale drug market of the world. It has been estimated that 40,000,000 pounds are shipped annually. In 1853 the coca leaf was investigated, but nothing save the coca tannin determined. In 1855 Guedeke found a crystalline principle, and called it erythroxylin, which Losson, in 1865, affirmed, but changed the name to cocaine. The process to obtain cocaine from the leaves is as follows: Coarsely ground leaves are repercolated with an aqueous five per cent. solution of sulphuric acid, and the dense percolate is agitated with pure coal oil and an excess of sodium carbonate.

The liberated alkaloid is retained by coal oil, and this solution is agitated with acidulated water, and again percolated by sodium carbonate in the presence of ether, when it may be allowed to crystallize. We then have cocaine, whose formula is C_{17}, H_{21}, NO_4, or in constitution methyl-benzoil-egonine. It forms colorless crystals of alkaline reaction, has a bitter taste, is soluble in 704 parts of water at 12° C., or 54 F., also in alcohol, ether and fusel oils. On boiling with alkaloids or acids, or on standing in aqueous solution, it splits up into methyl alcohol, benzoic acid and ecgonine, which is insoluble in alcohol.

The hydrochlorate crystallizes from water in delicate radiating needles, from alcohol in short thin prisms. It is white and nearly odorless, producing numbness. When taken into the system at 15° C. or 59° F. it is soluble in .48 parts of water, 3.5 parts of alcohol, 2,800 parts of ether, 17 parts of chloroform, insoluble in fusel oils. We as dentists use the hydrochlorate mostly in solutions of 10 to 20 per cent., which, when used cautiously, is a sufficient palliative in mercurial salivation. It is effective in relieving rheumatic toothache, the pains of dentition, and other operations, of which we are all aware. It has proven itself in a four per cent. solution to be an excellent hemorrhage stopper after the extraction of teeth.

In excavating cavities I have had little success with the hydrochlorate in allaying pain, but the citrate gave gratifying results when used in one-fifteenth of a grain, although the sensation at first was of a stinging character.

For painless extraction, I have tried the citrate and the oleate, but without success; and to me the only sure way is the use of the hydrochlorate hypodermically. The way the solutions are generally prepared seems almost criminal to me, as we have no sense whatever of what strength we are using. For instance, if we wish to use a four per cent. solution, 18 grains of the salt are placed in an ounce bottle, which is then filled with water, accuracy being thus utterly disregarded.

Many times we hear complaints that cocaine did not in any way lessen the pain of extraction, and the drug is condemned on that account. I have found that from two to four minutes should elapse between injection and extraction to obtain the best results.

During the past six years I have used cocaine in my practice extensively, both with gratifying and alarming results. It is claimed by some writers that two-fifths of a grain injected hypodermically will not produce the desired result, but in a few of my cases two-fifths and even one-fifth of a grain have given results which, perhaps, were not desired, owing to their alarming symptoms.

My first experience in this line was some five years ago, when I was requested to extract a root for a married lady. The gum was cleansed of all deposits by a solution of boracic acid, and then one-fifth of a grain of cocaine injected on either side of the root; immediately there was a collapse of system, the skin became cold and moist, respiration almost suspended, and pulse feeble, all consciousness seeming lost.

Another patient, a young lady of 18, received one-fifth of a grain, injected around the gums to relieve the pain of setting a crown. Immediately she lost consciousness, pulse became erratic, at times ran as high as 140, and so low that death seemed certain. Respiration seemed entirely stopped, and the eyes fairly bulged out of their sockets. After working some time with her she seemed to rally, only to pass off in the same state as she was, and this continued for several hours. During this time anæsthesia seemed complete over the whole body.

Several other and equally interesting cases of mine, I must omit for want of time. One day, while visiting a fellow-practitioner, he injected cocaine, how much I cannot say. The tooth was extracted, and then the trouble began—cold, moist skin, suspended respiration, an erratic heart and vomiting. One dram of whiskey injected hypodermically, artificial respiration, amyl nitrate and one hour's work brought him around all right. All these patients were closely questioned regarding their condition, and I found that either their stomach was without food for at least six hours, or that (in the cases of the women) they were either pregnant or catamenic. Accordingly I started to experiment on rabbits, by injecting one-tenth of a grain. On those that were well fed it seemed to have little effect. The males withstood it better than the females. Two out of three of the females that were about to have young died. They were all well fed. Those that had not had food for twelve hours showed more alarming symptoms, and one male and one female died out of three each. Two bucks had no food for twenty-four hours and both died. In none of my experiments was any remedy tried, as I wished to see the exact result the drug would have. When I have desired antidotes I have used the very best amyl nitrate, atropia, whiskey and ether subcutaneously.

It is better to prepare the solution as it is needed, as it decomposes after three days, or it may be kept perfectly for ten days if held in solution in chloroform water; but if solutions must be had on hand at all, try and have ten parts of antipyrine to one part of cocaine. I have known but one death that was the result of cocaine. On examination after death the brain, lungs and left side of the heart were filled with blood. Records show that in the past few years about 50 cases of poisoning are reported annually, of which on an average two result fatally.

GOLD VERSUS AMALGAM.

BY W. W. FREEMAN, WARREN, PA.

Read at the Twenty-seventh Union Dental Convention of the Sixth Seventh and Eighth District Dental Societies of the State of New York, held at Binghamton Oct. 29, 30 and 31, 1895.

There is perhaps today no subject engaging so widely the attention of the dental profession, or one that deserves in so great a degree their profoundest thought and investigation, as that of amalgam. The general use of the plastics by the profession at large is of comparatively recent date, and they have not always been popular. There was a time in the history of amalgam when it was worth a man's reputation to acknowledge its use. Happily that time is past.

Upon the introduction of the "new departure," it found some advocates who espoused its cause so warmly that they said, "Abolish gold! Use nothing but the plastics." Up to this time gold had held almost undisputed sway as a tooth preserver, and it was but natural that the conservative dentists who had, through years of successful practice proved its value, should exclaim against such a bold attempt to place a usurper upon the throne so long occupied by the king of metals; hence they looked with great suspicion upon the innovation. Such decided and radical positions were taken by the extreme advocates of each for their preferred material, that gold and amalgam were placed in diametric opposition. Long and warm discussions were held. In many cases where the gold men were in the majority, dentists were denied admission to, and even expelled from, dental societies, because they used amalgam. One eminent teacher put himself on record with the remarkable statement that "any cavity that was worth filling at all was worth filling with gold."

The practical conservative dentist of today is too busily engaged in the effort to save teeth to refuse to admit into his practice any material that will bring about the result he seeks. He knows from his own experience, as well as from that of others, that gold will not save all teeth; neither will amalgam restore to health and usefulness all classes and conditions of tooth structure; hence a careful discrimination in the selection of a filling material for given cases is absolutely essential.

I doubt much whether those who so strenuously oppose the use of amalgam are in the majority. On the contrary, I venture the opinion that their number is comparatively small. Undoubtedly there are some who maintain an aggressive attitude toward this material, and claim never under any circumstances to use it. A few hold the opinion that operative dentistry has been degraded by the introduction of amalgam. I have no sympathy with these views, opposing, as they do, a material, which in the hands of competent and conscientious men, has proved its right to existence and recognition as a valuable aid in the preservation of tooth structure.

In reviewing the literature pertaining to amalgam, and carefully considering the opinions expressed by various writers, I have concluded and I believe justly, that the use of amalgam has been most severely condemned by those who claim to fill successfully with gold all cavities, whether easy of access or in obscure position, in the teeth of frail structure and thin friable walls, or in those presenting the most favorable conditions. To these all-gold operators it matters not that the patient may be possessed of a weak, nervous organization, and that a lengthy operation under the all-gold treatment means prolonged suffering from the nervous exhaustion following it. Not only do delicate women and children suffer untold agony from such treatment, but strong men as well have their nerves severely tried.

I do not wish to be understood as condemning gold altogether; on the contrary, I am well aware of its great value, and the impossibility of substituting for it in certain positions any other material. But my plea is for a material, which, while assuring the preservation of the teeth, at the same time relieves the patient of the nervous and physical strain incident to prolonged gold operations.

Without doubt, more amalgam than gold is used today. If all the dental offices in the land could be visited, and an honest enumeration made of the number of fillings put in the mouths of patients, the amalgam fillings would be found to outnumber those of gold. If this be the case, amalgam is a greater factor in the preservation of the teeth than gold. Whether or not these fillings are inserted in a thorough manner, is not a question for our consideration at this time. Certainly if one does indifferent and slouchy work with amalgam, his gold work will be even worse. I know that a great deal of bad work is done with amalgam, but this is owing more often to a lack of thorough preparation of the cavity and bad manipulation of the material, than to amalgam itself. It is time that the too prevalent idea that anything will do for amalgam should be abolished, and that an earnest and conscientious desire to make the best possible use of it should be created.

The chance of failure with amalgam is not yet reduced to a minimum, but the impossibility of imperfection in gold work is greater, I believe, especially with a novice, even under the most favorable circumstances.

Many failures in the use of amalgam are due to causes other than a want of skill and judgment on the part of the operator. There are many things as yet unknown concerning dental amalgams, and the explorer after truth and knowledge will here find a fruitful field for investigation. I am glad to note the fact that prominent scientific men have entered this field, and it is very probable that we shall soon know what metals, and in what proportion, shall constitute an amalgam that will enable us to avoid the "spheroidal tendency" and overcome the "electro-chemical action," and also to produce a filling which shall, under all conditions of the oral secretions, maintain a clean and bright appearance. The average practitioner has neither the time nor the inclination, and perhaps not the talent, to deal with these problems, but at the same time he should assist, in every way possible, his more scientific brethren.

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DIAGNOSIS OF PYORRHŒA ALVEOLARIS.

BY FRANK L. SIBLEY, D. D. S., ROCHESTER, N. Y.

Read at the Twenty-seventh Union Dental Convention of the Sixth, Seventh and Eighth District Dental Societies of the State of New York, held at Binghamton Oct. 29, 30 and 31, 1895.

In all the pathological conditions that have to do with dentistry, perhaps none are more complicated or annoying than pyorrhœa alveolaris; and there are few subjects upon which there seem to be such a diversity of opinion. It is not my intention, at this time, to add anything to the already-much-talked-of etiology. On the contrary, I take this opportunity to point out where I think we are apt to err in our treatment—I might add, constitutional treatment.

The term pyorrhœa alveolaris is like the fabled "cloak of religion"—

it covers a multitude of sins. Any disease whereby pus exudes from the sockets of the teeth may be called pyorrhœa alveolaris.

I recognize two different systemic conditions in pyorrhœa, and term them, for my own convenience, salivary and lithæmic pyorrhœa. One seems as fatal to the teeth as the other. Salivary pyorrhœa is, as the name indicates, due to the deposition of salivary calculus on the necks of the teeth. Usually the first to suffer are the lower incisors and upper first molars, especially the lower incisors, they being in the direct path of the saliva, as it is poured into the mouth. Whether this is a constitutional condition, or the calculus is precipitated by some condition of the fluids of the oral cavity, I am not, at this time, prepared to state. However, the recession of the gums, the absorption of the process, and final loss of the teeth is the result. This calculus is alkaline, and hence can have no connection with the uric acid diathesis.

Lithæmic pyorrhœa is produced where the deposition of serumal calculus is on the roots of the teeth, below the free margin of the gums. The term serumal indicates it as coming from the blood. I believe it to be principally composed of uric acid and oxalate of lime. In this condition, the molars are usually the first to suffer, the others being lost in succession. The calculus, as I have stated before, is deposited under the free margin of the gums, near the apices of the roots, its presence causing the absorption of the process, and suppuration of the soft tissues, with loss of the teeth. In a large percentage of these cases you will find that it is hereditary, and I have often noticed it is from the paternal side of the family. In diagnosis, the urine is the factor in determining the lithæmic condition. The urine, when passed, is clear, but upon cooling to the temperature of fifty or sixty degrees Fahrenheit, it becomes cloudy, and in some instances throws down a pinkish deposit, which consists of free urates. On heating or being treated with alkalis, it clears up. This may occur in a perfectly healthy subject, after a heavy dinner at night, with wines, etc., but can only be regarded as a symptom, when persistent without errors of diet. You will find some persons affected at the age of thirty, others at forty, still others at sixty. Of course the earlier the time at which it appears, the stronger you will infer the hereditary disposition to be, and the more obstinate, probably, will be its tendency to persist. The resulting condition in the oral cavity is pyorrhœa, due to the gouty diathesis.

I have described two different conditions that are termed pyorrhœa, but the generally accepted constitutional treatment applies only to one, and that, the lithæmic pyorrhœa. As the majority of the cases presenting themselves to us are salivary and alkaline in character, if we prescribe the generally accepted constitutional treatment of pyorrhœa, the result is obvious. We have simply added fuel to the fire.

THE PHYSICAL CHARACTERISTICS OF THE TEETH.

AN EDITORIAL EPITOME.—CONTINUED.

The last number of this journal contained an abstract of one of the papers published by Dr. G. V. Black, in the *Dental Cosmos*, upon the "Physical Characteristics of the Human Teeth." These papers contain so much that is new and startling, they are the record of so many apparently carefully conducted experiments, and they come from such a distinguished source, that they demand something more than mere passing attention. The one contained in the June *Cosmos*, upon "The Force Exerted in the Closure of the Jaws," was briefly reviewed in the July number of this journal. That in the May *Cosmos*, upon the structures, density and other characteristics of the teeth, and the possible change, that may occur in them, was summarized in the October number. It is now proposed to consider the one in the July *Cosmos*, which relates principally to the fillings which may be inserted in teeth.

Dr. Black sets out with the assertion that in the use of filling materials their strength should bear some relation to that of the teeth, and to the ordinary or extraordinary force which may be brought to bear upon the fillings when in use. That of ordinary mastication has been shown to be from sixty to eighty pounds upon the area of two molars of medium size. If this stress was evenly distributed, it would give from seven to ten pounds on a filling occupying one-fourth the surface of one of these teeth. But this masticatory force is not thus spread over the tooth. At times the whole may be brought to bear directly upon the filling, and through the intervention of some hard substance, as much as two hundred pounds' stress may be thus concentrated directly on the filling. There are very few materials that have sufficient of strength and impenetrability to withstand this. Only gold and amalgam could prove equal to such a task. Every other material must, therefore, be considered as merely temporary, when placed in positions in which it is exposed to the force of the jaws.

The paper is almost entirely devoted to that hackneyed subject, amalgam, and the author has succeeded in saying something new about it. Many had conceived that the material had been considered from every possible standpoint, but Dr. Black firmly believes that he has found new characteristics in it, which may account for many of the singular phenomena that it has, under varying circumstances, exhibited. Yet he has not succeeded in the discovery of any law that enables him always to reach the same result in the preparation of amalgam fillings, and to predict with confidence what phenomena they will exhibit. After detailing the results of a large number of experiments, he says: "The idea that I was unable, after thirty years of experience, to make two fillings from the same mix of material that would test any nearer alike than those given, was humiliating." This indicated that all the mysteries connected with that uncertain material were not yet solved, and that there was room for yet further observation and experimentation.

Dr. Black sets out with the consideration of the amalgams made from a silver-tin alloy. These are composed of varying proportions of these two metals, ranging from forty parts of tin and sixty of silver, to sixty parts of tin and forty of silver. The most of the alloys also contain small quantities of other metals, such as gold, platinum, iridium, copper, zinc, bismuth, etc. When the alloys are prepared, by being cut or filed into minute portions, they are made into an amalgam by adding varying proportions of mercury. This latter metal may form from thirty to fifty per cent. of the whole mass, and it is the behavior of such a filling during and subsequent to the process of crystallization that ensues, which forms the subject for the experiments and observations conducted by the author.

He set about the conduct of such a series of experiments as has been employed in testing the resistance and elasticity of the metals used for engineering purposes, such as railway bridges, buildings, etc. To properly carry them on, he was obliged to devise and construct apparatus that was adapted to the purposes desired. He next obtained from different manufacturers of alloys samples sufficient for use, with their formulæ, whenever it was possible to obtain it, and then proceeded to study the characteristics of fillings made from them when mixed with different proportions of mercury.

The first quality in the silver-tin amalgams that impresses itself upon the observer is their brittleness. When struck with a hammer they fly in pieces, like glass. This naturally leads to the inference that, under severe pressure, an amalgam will withstand the strain up to the limit of endurance, and then suddenly crush in pieces. They are not believed to be ductile in any measure, but resemble cast iron rather than wrought iron. It was known that they did change their form when inserted in cavities in teeth, and many ingenious experimenters have spent a great deal of time in the effort to determine what was the cause of this mobility. It was demonstrated that some amalgams expanded in the process of crystallization, while others contracted. Nor could any fixed, definite rule be determined that would enable the observer to forecast the result. The expansion or contraction might continue for days, or it might cease as soon as the mass was crystallized. There seemed to be no law that was at all general, and the variations were ascribed to differences in mixing, etc.

The truth then was that an amalgam filling, especially if it were subjected to the force of mastication, would change its form, and in some instances draw away from the margin, and become heaped up in some other part of the filling. It would perhaps protrude in the center, or if it were a large approximal filling, it would bulge out near the cervix. Finally it came to be believed that amalgams had the same tendency to assume a globular form that a drop of any liquid has, or that a globule of mercury assumes, when it is spilled upon the table. It is upon this hypothesis that we have been relying for some time, and although it did not answer all the varying conditions, it was the best theory we had, and so it came to be generally accepted. This supposed quality was termed the spheroidicity of amalgam, or its tendency to assume the form of a sphere.

But Dr. Black, in the course of his experiments, found that the commonly supposed lack of ductility in silver-tin amalgams was an error. Under certain conditions, and subjected to the stress of certain forces, they became quite ductile. For instance, they could not be beaten out under the hammer, like the silver and tin of which they are chiefly composed, but they yielded to a steady moderate pressure, whether continuously or interruptedly applied. If the pressure was too great they flew into pieces, while if it was light they might, under it, be drawn out into thin laminæ. This was a comparatively new quality in amalgam. It was at the same time very brittle and very ductile, and Dr. Black proceeded to investigate these apparently antagonistic characteristics. To do this, he had made a device that would fashion blocks of exactly the same size, and with edges that were microscopically perfect. If, now, one of these blocks was put in the apparatus used for measuring the amount of pressure, the dynamometer, and the stress turned on rapidly, it crushed, usually at from two to three hundred pounds.

But if the stress was turned on gradually, until fifty or one hundred pounds were reached, different phenomena were produced. The amalgam block gradually yielded and changed its form. This was nothing new in metals, for iron, steel, silver, gold and other metals will do the same, with this difference: when the force is applied, the metal at once changes its form definitely in proportion to the amount of stress employed, and then remains stationary. If more power is now applied a further change may occur, which then immediately ceases. It is not so with an amalgam. The change of form will continue as long as the force is active, and if it be lessened the change will still go on, but at a slower rate. This change of form Dr. Black calls the flow of the amalgam, and it will be seen materially to differ from the flow of other metals.

This flow, or tendency to a change of form under pressure, became the subject of investigation. A cube of amalgam, measuring .085 of an inch in all its dimensions, was subjected to a lateral pressure of say fifty pounds. If at the end of an hour it was reduced to .074 of an inch, the flow was ten per cent. for that hour. Of course the other dimensions of the block would be increased; that is, its length and depth would become greater in a like proportion. This was continued from hour to hour, and the rate of flow under varying conditions determined for the successive hours. Cubes of pure tin and of pure silver were then subjected to the same test, except that the silver was subjected to the pressure exerted upon a hard steel point placed against the block, and its rate of sinking into the block noted.

A comparison of these results indicated that it was the tin that gave the disposition to flow in an amalgam. But when an alloy of pure tin and silver was subjected to the same test, it was found that the block was equally resistant with pure silver. The peculiar flow was not then in the tin, the silver, or the alloy formed of the two. It must be in the mass that resulted from the amalgamating of the alloy with the mercury.

But the experiments performed showed that this flow was never a constant quantity. It varied, and Dr. Black was as much puzzled to account for the differing phenomena shown as had been other observers who endeavored to determine the rate of shrinkage or expansion of an amalgam during crystallization. Two blocks taken from the same mix of amalgam, and therefore supposed to be identical in their ingredients, would present differing rates of flow. For instance:

An alloy of the following formula—silver 47.06, tin 51.76, copper .94, zinc 24—was amalgamated with mercury by grinding in a wedgewood mortar in the usual way. The mass was divided into two parts. One of these was wrung out through muslin to get rid of the superfluous mercury. Of this, four blocks were made with mallet pressure, to remove as much more of the mercury as possible. Four more blocks were made from the same mass by hand pressure, using care to remove no mercury while doing so, while a third set of four blocks was made from that portion of the mass which had not been wrung out through muslin. Two days after all the blocks were tested with a stress of fifty pounds.

Of the first set, wrung out through muslin and inserted with mallet pressure, removing surplus mercury, the first block gave a flow in one hour of 17.07 per cent., the second 36.58, the third 23.57, while the fourth was crushed at 255 pounds.

Of the second set, wrung out through muslin and inserted by hand pressure, the surplus mercury not being removed, the first gave 23.63, the second 72.12, the third 22.41, while the fourth crushed at 240 pounds.

Of the third set, made from the mass not wrung out through muslin, the first gave a flow of 89 per cent. within ten minutes, the second crushed at 40 pounds, and the third gave a flow of 69.13 per cent. in one hour. The fourth was imperfect and not tested.

Here was a wide divergence without any observable reason. The third set of blocks contained altogether too much mercury of course, but what was the matter with the two other sets? There was no regularity in the results, although Dr. Black endeavored to pack the blocks with equal care. There was a difference of 50 per cent. in the flow of the different blocks made from the same mix of alloy, and supposed to be nearly identical. A considerable number of experiments were made with a like diversity, and Dr. Black came to the conclusion that there is little wonder that the results of the practical use of amalgams in filling teeth are so uncertain, and often disappointing, when he, an old practitioner, was unable to make two fillings from the same mix of amalgam which would present the same characteristics.

The next thing was to determine, if possible, the reasons for this diversity of results. A new series of experiments was begun, in which the formula of each alloy was known, the amount, with the exact amount of mercury used, was determined by careful weighing, the loss in wringing out ascertained, every movement in inserting the filling made as uniform as possible, and every data recorded in a book. As a result of three months' experimentation, some definite facts were established, which may be deduced from the following statistics.

To make an amalgam there was taken of

Mercury	1.060 milligrams.
Alloy	1.060 milligrams.

The mass was mixed in the hand and then weighed.

Mass when amalgamated		2.052 milligrams.
Loss in mixing		.068 milligrams.
Mass wrung out		1.675 milligrams.
Mercury removed		.377 milligrams.
Final mass	Mercury	38.47 per cent.
	Alloy	61.26 per cent.

This table is instructive. It was found that when equal quantities of mercury and alloy were mixed together there was a loss of about .06 per cent. in the amalgamation. Then equal quantities of the alloy and of the mercury having been taken, there was wrung out of them enough of mercury to make the final proportions in the amalgam of the alloy to the mercury about 60 to 40.

Fillings made from this amalgam presented the following results:

Block.	Time.	Stress.	Per cent. of flow.
1.	Made immediately after mixing.	60 lbs. 1 hour.	25.60
2.	Made 10 minutes after mixing.	Crushed at 235 lbs.	
3.	" 20 " " "	60 lbs. 1 hour.	24.69
4.	" 30 " " "	Crushed at 235 lbs.	
5.	" 40 " " "	60 lbs. 1 hour.	25.00
6.	" 30 " " "	60 lbs. 1 hour.	24.94
7.	" 40 " " "	60 lbs. 1 hour.	25.00

The last two blocks were not tested until two days after the others. Here is something approaching a greater uniformity of result. They showed that so long as the amalgam could be successfully worked, it did not much matter whether the filling was immediately inserted or a considerable time was allowed to elapse. It also showed that there was little change in the filling after it was inserted, during the period of crystallization. Dr. Black found that the strength of the fillings depended upon the evenness of distribution of the mercury. Any violence to the filling weakens the product. The inference then is, that the amalgam should not be hammered or violently worked, as that disturbs the even spread of the mercury and reduces the strength of the filling. If surplus mercury is brought to the surface of a filling during the manipulation, it should be carefully removed.

These results are in accordance with those of a series of experiments conducted by Amos Kirby, L. D. S., of England, and presented before the British Dental Association, in 1891. In these observations Mr. Kirby wes led to attribute the change in form of an amalgam to the uneven distribution of the mercury. A summary of them was published in the number of this journal for January, 1892.

It was found that grinding in a mortar caused the mass to take up more mercury, and did not produce so strong a filling. An excess of mercury —above 40 to 45 per cent. of the mass—made a weak filling. Squeezing in a vise was detrimental to a filling, because it unevenly distributed the mercury, and was too violent treatment of the mass. When alloys are cut very fine and then amalgamated, there is much greater flow than when they are in a coarser form. That is because they become more pasty, and less granular.

Dr. Black appends a table, the results of more than fifty experiments to determine the characteristics of different fillings inserted in varying ways. It is unnecessary to summarize them here, because, of the lack of uniformity of results. The chief point of interest centers in what he calls the flow under pressure. Some other points may be briefly stated, as follows:

The formula of the alloy largely controls the flow.

The addition to a silver-tin alloy of any metal save copper, appears to increase the flow. The latter seems to diminish it.

Copper amalgams are not subject to flow. They hold their form under any stress that will not crush them.

Dr. Black believes that the phenomena commonly called the spheroiding of amalgams has no real existence, but arises from a misinterpretation of that which he calls the flow. He has never observed the change of form outside the mouth. All dentists will probably confirm the assertion.

that a block of amalgam made with sharp angles will preserve that form for an indefinite period, if it be put away in a box. Any one who has kept such blocks must have observed this fact. That which is called spheroiding is not then a spontaneous process, but only takes place in a tooth. Dr. Black says that it manifests itself usually by rising in the center higher than it is at the edges. This may arise from the expansion of some amalgams during crystallization, which would naturally manifest itself at the center rather than at the periphery, and would cause the protuberance that is sometimes seen. Ice will show this when formed in a vessel sufficiently strong and unyielding to withstand the lateral expansion, and cause a flow upward.

Amalgam fillings inserted in ivory or extracted teeth for experimental purposes do not give reliable results, because of the drying out of the matrix in which they are placed, and their consequent shrinkage, which will produce a flow not unlike that observed in the formation of ice within a strong vessel.

The general conclusions of the author of the series of article in *The Cosmos*, is that the phenomena that has been called the spheroiding of amalgams is but their flow under pressure. Whenever one is inserted in a position in which it must bear the stress of considerable mastication, it will slowly but surely yield to that force and assume a different form. This is intensified when the filling rests upon a narrow or small base—the seat of the filling—and is opposed on its surface by a pointed cusp. The filling thus placed between two points, more or less narrow, will surely be forced from its original form and position, and in extreme instances may even be forced out of a cavity that was sufficiently retentive in shape to hold a filling that was not subject to these conditions. If the seat of the filling is rounded, there will be a steady tilting of the mass, through the change in shape, until there is distinct leakage about its margins, and its integrity and usefulness is entirely destroyed.

These facts show that the proper anchoring of an amalgam filling is not the simple matter that it has usually been supposed to be. If the seat of it is not sufficiently broad, and the force of mastication is brought to bear upon it, there will certainly be a dislodgment. The best manner in which to shape the cavity will be to give it a broad, level base, with nearly parallel side walls.

It is probable that the clinical experience of most dentists will, to a considerable extent at least, confirm the observations of Dr. Black. Especially is this true of copper amalgams, which were so extensively and disastrously used a few years since. It has been observed that while they rapidly disintegrated, their margins were free from any tendency to draw away from the walls. There was no observable "spheroiding," or bulging in any part.

THE DENTAL PRACTITIONER
AND ADVERTISER.

DR. W. C. BARRETT, ... EDITOR.

BUFFALO, N. Y., JANUARY, 1896.

TOOTH CALCIFICATION.

We desire to call attention to the article by Dr. S. B. Palmer in this number, upon "Dental Science Then and Now," which is an answer to our summary of that by Dr. Black, upon "The Physical Characteristics of the Teeth." We regret that Dr. Palmer has, we think, failed to comprehend the aim of our well-meant badinage. We entirely disclaim any desire to taunt or to scoff at the theories held by him in common with many others. While we have never been able to subscribe to the bold doctrine of the so-called "new departure," we are free to admit that it has made a considerable impression upon our mind, and we have ever honored Dr. Palmer for having the courage of his convictions, and holding to his theories, even in the face of the most adverse criticism. There are many particulars in which we quite agree with him, but there are other points on which we can but doubt.

In this instance we did desire to challenge an answer on the part of Dr. Palmer, and we are very glad that the attempt was successful, and that he was roused to the effort which the sound of the bugle provoked. Nothing but good can come of it, provided no feeling of personality enters into the discussion. We have no article in either our religious or professional creed which will not bear the search-light of the most rigid investigation. At least if any will not, it shall be discarded for something that is question-proof, provided such can be found.

While we cannot and do not deny his facts, we are not yet ready unhesitatingly to accept all of Dr. Black's deductions. They are at variance with clinical experience. And yet, that is but an uncertain quantity, and as liable to lead to error as is a diagnosis made exclusively from subjective symptoms. The world has generally accepted the hypothesis that there is a wide difference in the amount of calcific material that may be found in the teeth of different individuals. Some teeth certainly are harder than others, and when one meets a set of teeth that early succumbs to caries, the natural inference is that they are less dense than those that withstand decay better. But the controverting facts presented by Dr. Black seem invincible. He elaborates every data, and piles instance upon instance until the array is truly formidable. He seems to have fortified every vulnerable point and forestalled criticism. Every step in his series of experiments is laid bare, and it is comparatively easy to go over the whole and verify or disprove what he has averred.

There is no disputing the fact that this is very disconcerting to those who are but generalizers and theorists, as is almost every one who has written or speculated upon the matter. There are so few who have the ability or patience to conduct such a series of experiments as shall be conclusive, that it is hard challenging such an array of demonstrated facts as was presented by Dr. Black. And yet how can we adopt them? They mean the abandonment of all our previous theories and the acceptance of new rules of practice. To be sure, we have not been so uniformly successful in the past that there is no need of further study, but we thought we were making steady progress in the right direction. We knew there were a few operators, like Varney and Webb, who were possessed of such phenomenal skill that they could throw to the winds all philosophising upon conditions, and insert fillings of gold regardless of all thoughts of compatibility, that were practically indestructible. They did not need to bother about electrical, or any other theories. Their skill was sufficient for every occasion.

The demonstrations of Black are, in brief, that in the *same teeth*, in the mouths of different persons of the *same age*, there is practically no difference in the amount of the lime salts; that the teeth which melt down like sugar were essentially the same in their mineral structure with those that withstood caries to the end. He did not say that their organic structure is the same, or that their vitality is identical. He said the reverse of this, and that any difference which exists must be in their living matter and in their environment. We all know that two individuals may be physically perfect in the same degree, so far as we can determine, and yet the one shall be always hale and hearty, shall successfully withstand the most adverse conditions, while the other will be perpetually ailing. There is a constitutional difference not visible to the eye or discernible under analysis. It may be so with the teeth, but that is no reason why every effort should not be put forth to determine what is the law that governs these conditions.

Demonstrated facts cannot be successfully refuted by mere generalizations. They must be met by counter-facts, as incontestibly demonstrated by equally conclusive experiments. Physical proofs cannot be overthrown by abstruse metaphysical reasoning, and the world is waiting for some one to present a series of established tables that shall confute those of Dr. Black. He has made assertions, and apparently proved them, that are at variance with all our preconceived ideas. If he is right, we must look elsewhere than in the degree of calcification for the liability of teeth to decay.

The manner of calcification of the tooth may afford some clue to the mystery. We know that when calcific matter is held in suspension in an inorganic solution, it is thrown down as an amorphous powder, or deposited in a structureless mass. But when it is held in the presence of an organic compound, like albumen, its precipitation is attended with a marked change in the phenomena exhibited. It assumes a definite form and becomes laminated in structure, while the organic matrix in which it may be deposited becomes indestructible to ordinary agents. Thus when bone is formed through the deposition of the lime salts in a cartilaginous matrix, the calcific matter assumes a definite form, because the cartilage contains the organic matter that works the change. The conditions are those under which the calcification of the tooth proceeds. Instead of the lime being deposited in an amorphous manner, calco-spherites are formed, and the calco-globuline in which they are deposited, or which forms their base, takes on a new character. In the light of these facts it is quite possible that, although the lime salts in two teeth may be identical in quantity and in structure, the calco-globuline base may not be equally resistant to disintegrating forces.

But whatever is the real esoteric truth of the matter, such investigations as those of Dr. Black should be encouraged and stimulated. If he shocks us once, we should straightway invite him and others to shock us some more. We need stirring up to provoke enquiry. There is no hypothesis too sacred for analysis of its truth. There is no dogma that is above the most thorough investigation. If our theories are at variance with demonstrated facts, so much the worse for them. The philosopher who sets out with an assumption and then attempts to make facts conform to it, is not a true investigator; he is a perverter of the truth.

REMEDIES FOR THE USE OF DENTISTS.

The field of dentistry is becoming broader each year, and the practitioner is now called upon to treat many diseases that not long since were supposed to be beyond his skill and out of his province. The time is at hand when people will go to him for advice concerning every pathological condition of the oral cavity, as they now go to the oculist for all affections of the eye. Not long since carbolic acid, arsenious acid, and a very few more simple remedies, composed the entire armamentarium of the dentist's office, so far as drugs were concerned. Now, the practitioner who has kept pace with professional advancement must make prescriptions frequently, and is required to know the nature of a very large class of drugs, even more intimately than the man in general medical practice. Very many of these are used in special preparations, and employed for office practice. The dentist, therefore, must have them at hand at all times. He needs some of them in varying solutions, according to the nature of the case. If he keeps a standard preparation, he can readily dilute it himself to the required strength.

Every dentist should have a medicine cabinet attached to the wall of his operating room, that will be of sufficient capacity to hold all the remedies that he can possibly need. It should have no glass to admit light, for many preparations rapidly decompose or deteriorate when light is admitted. It should close in such a manner that not a ray can be admitted, and it should be kept closed except when it is necessary to open it to obtain any desired remedy. There should be a set of neat glass-stoppered bottles, uniform in style, and ranging in size from a half-ounce to eight ounces. Each should be neatly and plainly labeled, and those which contain active poisons should have a label different in color from the others. If those which are not specially toxic in their properties have white labels, the poisonous ones should be marked in red, which is the usual signal of danger.

A small graduate glass should be kept in the case for convenience in measuring, and a list of antidotes to the principal poisons should be pasted on the inside of the door, where they will meet the eye every time the case is opened. This will make the dentist familiar with the usual agents for counteracting the common toxic drugs. Even though this knowledge may not be needed in the office, it is information that may prove of great use in many an emergency outside it. Such a case, so prepared, would not be expensive, and the cost of it would be returned an hundred fold in the added consideration which its possession would give in the eyes of his patients. Its presence would also educate in and stimulate to the use of drugs and the study of diseased conditions, and would thus broaden the practice of the dentist who had it continually before his eyes, and materially add to his income by extending his labors into new fields.

We venture, for the benefit of students and others, to append a list of remedies that should be in the case of every dentist, and in some instances to specify the preparations that are most desirable. If all are purchased at some drug house at one time, their expense will be but comparatively little, as they can thus be procured at wholesale rates. Only the purest drugs should be admitted, for no one can afford to economize in that upon which a successful practice must be based.

Local Anæsthetics, etc.

Chloroform (Squibb's)	oz. 4
Sulphuric ether (Squibb's)	" 4
Cocaine Hyd., 10 per cent.	" 2
Chloral Hyd.	dr. 2

Antiseptics.

Carbolic Acid.	oz. 2
Permanganate Pot., 20 grs. to the oz.	" 4
Thymol.	" 1
Eucalyptus	" 1
Ol. Cassia.	" 1
Ol. Wintergreen.	" 1
Eugenol	" 1
Boric Acid, 20 grs. to the oz.	" 2
Black's 1 2 3 Solution.	" 1
Merc. Chloride, 1000 x 1	" 8
Lysol	" 2

Disinfectants.

Per Ox. Hyd	oz. 4
Pyrozone.	" 2
Electrozone.	" 8

Stimulating Astringents.

Chloride of Zinc, 20 grs. to oz	oz. 4
Iodide of Zinc, 20 grs. to oz.	" 4

Astringents and Styptics.

Tannic Acid.	dr. 2
Creosote	" 2
Monsell's Salt.	" 2
Tannin and Glycerine.	oz. 1

Stimulants.

Alcohol.	oz. 8
Brandy.	" 8
Whiskey.	" 8
Aqua Ammonia	" 2
Nitrate of Amyl	dr. 4

Narcotics and Anodynes.

Tinct. Opii	oz. 1
Chlfrm.; Tinct. Camph., *aa*	" 2
Sulph. Morphia, in ¼ gr. capsules	gr. 2
Arm. Spts. Ammonia	oz. 4
Bromide Potass	dr. 4

Counter Irritants.

Tinct. Iodine	oz. 1
Capsicum Plasters	box 1
Tinct. Iodine; Tinct. Aconite Rad *aa.*	oz. 1
Tinct. Iodine and Glycerine *aa.*	" 1

Mouth Washes, Gargles, etc.

Listerine.	oz. 8
Sol. Chlorat. Pot., 20 grs. to oz.	" 8
Arsenical Paste:	
Arsenious Acid.	
Cocaine Mur.	
Creosote *aa.*	
Sulphuric Acid	oz. 2
Dyalized Iron.	" 2
Tri-Chlor. Acetic Acid	dr. 4
Glycerine.	oz. 2
Vaseline	" 2
Collodion.	" 2
Copal Ether Varnish	dr. 2
Nitrate of Silver	gr. 20
Milk of Magnesia (Phillips's)	oz. 8
Red and Blue Litmus.	
Antiseptic Gauze.	
Antiseptic Lint.	
Adhesive Plaster.	
Roller Bandages.	
Mouth Thermometer.	
Galvanic Battery, with Faradic and direct currents.	
Silver Probes.	
Hypodermic Syringe.	

There are many other remedies that might be included, but these are the more essential. Some of them are intended for dilution. If, for instance, it is deemed advisable to use a solution of chlorate of potassa that has ten grains to the ounce, it is only necessary to add an equal volume of water to the standard solution. The chloride and iodide of zinc may also be diluted in like manner. The mercuric chloride solution should be prepared by placing one of the tablets, that may be purchased at the drug store, in the requisite quantity of water, and then diluting it as desired. The hypodermic remedies may be purchased in tablet form, each one containing the proper amount of morphine, atropia or strychnine for a hypodermic dose. This list is given suggestively. The dentist will add to it whatever other remedies he may demand in his practice. Of course it is intended that when it is desired to prescribe general remedies, unless in case of great emergency, a prescription will be given that the druggist will fill.

JAMES E. GARRETSON.

It was with no ordinary feelings of regret that dentists all over this country late in October received, by word of mouth or through friendly letters, the news that Prof. James E. Garretson was dying at his home, in Landsdowne, Pa. He had so long been connected with everything that represented higher culture in dentistry, he was so thoroughly identified with our educational system and with our literature, that hundreds who had never seen his face, mourned his passing away with a deep sentiment of personal loss. What, then, were the feelings of those who knew the man and were honored with his friendship.

In many respects Prof. Garretson was the foremost man in American dentistry. Whether as an author, a teacher, or in the practice of his specialty in dentistry, there were none who stood on a higher plane. He was not one of those who exhibit ability in one restricted field alone, but his character was rounded out at all points. He was honored for his attainments, and there was not a dentist who did not feel that he reflected credit upon his profession, and that because Garretson lived and labored, dentistry in America occupied a higher position than it otherwise would have done.

Perhaps he was best known as the daring, skillful oral surgeon. His name was connected with so many grave operations, he had so long stood at the head of oral surgeons, and his success had been so signal and almost uninterrupted, that his fame had spread to every village of the land. Patients from all over the United States, and from distant foreign countries, had flocked to Philadelphia to avail themselves of his acknowledged skill. He had indeed made oral surgery as a specialty in dentistry what it now is, and had demonstrated that the competent dentist is peculiarly qualified for the performance of a large class of surgical operations that are connected with his special department of the human anatomy. As a teacher of surgery and surgical pathology, as a clinical lecturer at the operating table, he had scarce a peer among us.

He was also a philosopher of a rare kind. His mind was clearly analytical, and at the same time imaginative. Many who knew him as the author of a system of oral surgery were unaware that he had also published a number of books, under the pseudonym of John Darby, that established his fame as a metaphysician of no mean order. Some of the John Darby books took up the most abstruse and occult subjects, and upon them he reasoned in a manner to charm the philosophical reader. His diction was so clear, graceful, and even dainty, there was such an easy, steady flow of thought, his style was so charming and winning, that there is no saying to what distinction in this field he might not have arisen, had he chosen to devote himself to it exclusively. It is difficult to imagine that the author of "The System of Oral Surgery" was the same man who wrote "Two Thousand Years After." The two works are utterly unlike in their characteristics; the one concise, descriptive, almost prosaic, the other so speculative, so recondite, so transcendental. And yet the clearly analytical mind, the refined and purified literary taste, the delightful style of the one may be traced in the other. His were indeed rare gifts, that enabled him to shine in fields so dissimilar.

His delicacy of discernment and refinement of feeling made him to those who could comprehend him one of the most delightful of companions. He had nothing in common with grossness, and indelicacies of speech and coarseness of expression caused him to shrink within himself as if rudely assaulted. Yet no one who came into his presence could fail to be touched with the genuine kindness of heart and geniality of temperament that was a distinguishing characteristic in his lovable nature. Especially were the students who listened to his instructive lectures drawn toward him. They instinctively felt that he was their kind friend, and they sought his counsels and advice in every emergency. His death creates a void in many a heart that will long sigh for the sound of the voice that is stilled.

James Edmund Garretson, A. M., M. D., D. D. S., was born in Wilmington, Delaware, October 18, 1828. He commenced the study of dentistry with Dr. Thacher, of Wilmington, in 1850, and began practice in Woodbury, N. J., later removing to Philadelphia. He graduated in dentistry in 1856, and in medicine in 1859. At the organization of the Philadelphia Dental College, in 1862, he became the professor of pathology and therapeutics, but resigned to accept a chair in the Philadelphia School of Anatomy. In 1864 he re-entered the Philadelphia Dental College as professor of anatomy and surgery. In 1880 he became the dean, which position he filled up to the time of his death, October 26, 1895.

THE DENTAL CURRICULUM.

Things in this world are usually valued for what they cost—by what they represent. Formerly a dental diploma was obtained at the end of a few months' study. It represented but a comparatively low degree of erudition and a small amount of professional training, and it was valued accordingly. Now the diploma of a respectable dental college is only obtained at the end of a full three years' course of hard, exhaustive research and labor. It represents an amount of study and devotion that would have been almost inconceivable to the student of twenty years since. That study covers a curriculum that has been year by year enlarged, until now it embraces a course that successfully completed makes of the graduate a scientific man.

Nor is the end yet reached. There is a general feeling among educators and educated that the time is insufficient for the mastery of that which should be comprehended, and the National Association of Dental Faculties has already extended the length of the sessions, and purposes to extend them still more, and the time is near when a four years' course will be demanded. Each year new studies are added to the curriculum, and soon a dental diploma will stand for a thorough education, not only in the every-day routine of a conservative practice, but in the correlative branches of physical science as well.

Twenty years since almost any one could obtain entrance into a dental college. The preliminary requirements were little more than a knowledge of the commonest rudiments of an English education. Now, in most colleges, the applicant must pass an exhaustive examination in elementary physical science, and be well versed in the use of his mother tongue. Each year this standard is raised, and soon no young man will be received without the proper certificate from some literary institution that he has attained a definite status. The State of New York is taking the lead in this matter of preliminary education, and after one year more no student can be matriculated who has not a diploma which establishes the fact that he has passed the full high-school course and graduated with academical honors.

All this will confer an added value upon the dental diploma. It will represent at least six years of earnest labor after the completion of the common-school course. Every day's work will be represented in it, and will add to its value the cost of that labor. If each of these day's work represents a dollar, the diploma has an actual cash value of just that many dollars. Its possession is a capital in life that represents so much of accumulation, and it will be estimated accordingly. The graduate occupies a higher place in the world than would the man who had no such distinction.

The raising of the preliminary requirements and the extending of the curriculum is a thing which should receive the approval, as well of every dentist as of every dental student, for it means a higher status, not only of the professional name and reputation, but of every practitioner who shall hereafter enter our ranks, while it will confer reflected honor upon those already in practice.

CURRENT NEWS AND EXCERPTS.

IN MEMORIAM.

At the union meeting of the Sixth, Seventh and Eighth District Dental Societies of the State of New York, held in Binghamton October 29th, 30th and 31st, the death of Prof. James E. Garretson was announced. The chair appointed a committee consisting of Drs. W. C. Barrett, A. M. Holmes and S. B. Palmer to report suitable resolutions, which was done, as follows:

Resolved, That the members of this convention learn with deepest sorrow of the death of Professor James E. Garretson, and they desire to make a formal expression of their admiration for his character and attainments. Whether as surgeon, author or teacher he came before us and the world, he always gave us reason to feel a just pride that he was one of our profession. At a time that was a crucial period in dentistry, by his erudition, his literary attainments, and his professional fame, he aided greatly in elevating dentistry and placing it upon its present high acknowledged plane.

As a teacher, whether with his voice or pen, he stood in the front rank of men, and his efforts to widen the field of dentistry have resulted in great good to all of us and to the world.

Added to all this were the innate qualities of a genial, kind-hearted, lovable personality that made him the idol of his students and the pride of his associates. His death leaves a blank that will long remain unfilled, and a void in our hearts that shall never be forgotten, for he was beloved by all of us whether or not we had the honor of his personal acquaintance.

Resolved, That in testimony of our sense of the great loss which dentistry has sustained in his death, and of our sense of personal bereavement, the desk of our presiding officer be draped with the emblems of mourning during the remainder of this meeting.

CONCERNING CONSUMPTION.

The Board of Health of the City of Buffalo has issued the subjoined circular to all the physicians of the city. There is no reason why, with proper isolation, the dread scourge consumption should not be as effectually stamped out as is cholera. The latest developments of science show that this disease is not inherited, but is communicated in every instance:

Dear Doctor,—You are aware that tuberculosis is strictly a contagious disease, and can be prevented, providing the proper sanitary regulations are adopted. Therefore, after June 15, 1895, the Department of Health, in the interest of the public safety, demands that all cases of pulmonary tuberculosis (consumption) occurring in your practice, be reported to this office, whereupon a circular of instructions will be sent to the family, or those in charge of such patients, with the object of lessening and preventing the spread of this dire complaint.

Whenever the diagnosis as to the existence of the disease is in doubt, you are most respectfully requested to submit to the Bacteriological Bureau of this Department the sputum of such cases, for a bacteriological test, which will be made free of charge. The report of this examination will be sent you by mail.

Yours most respectfully,
Ernest Wende, M. D.,
Health Commissioner.

BALSAM VARNISH.

Dr. Howard's Antiseptic Varnish for coating cavities preparatory to filling, consists of Canada balsam, to which has been added mercuric-chloride and thymol, evaporated over a water-bath from twenty to twenty-eight hours, and finally dissolved in chloroform. The proper consistency can only be determined by experience and careful observation, and it is upon this that its usefulness depends. When improperly prepared it is valueless. It is not, of course, intended to retain fillings, but to aid in their adaptation, and to act as an anti-thermal and protective coating. This formula has been annually given to the classes of Dr. Howard in the University of Buffalo.

NEWSPAPER SCIENCE.

Here are a few absurd items that have been culled from newspaper and journalistic sources. Most people will accept as a fact any bit of scientific intelligence that they may see in print. Is it any wonder, then, that there are such mistaken ideas about questions of fact, when such misinformation is given to the public?

"Blue-eyed cats are said by Darwin to be always deaf."

The same is said of white cats, but Darwin was not such a fool as to believe that the effectiveness of the ears depends upon the color of the eyes. There is no truth in the assertion.

"The hog eats fewer plants than any other herb-feeding animal."

The hog is not a herbivorous animal, but is omivorous, and is capable of subsisting upon a wider range of food than any animal, except man.

"Carnivorous animals seldom produce more than two young at a birth."

Cats and dogs belong to the carnivora, and they produce more than that number usually.

"The sword-fish does not use its terrible weapon as a dagger, but as a flail."

Does the sword-fish flail its weapon through the bottom of a ship, as it has done in numerous instances? The mistaken opinion probably comes from the fact that the sword-fish and the thresher sometimes attack the whale in concert, the former thrusting from below and driving the whale to the surface of the water, where the thresher attacks it.

"The greatest velocity attained by the whale when struck by a harpoon is nine miles per hour."

The whale has been known to tow a number of boats at that rate.

"A curious partnership often exists between the sea anemone and the hermit crab. The latter always has an anemone fastened to his shell, and when he changes his quarters he takes his anemone along, provided he can detach it from the old shell."

The hermit crab has no shell, but lives in any protected place which it can secure.

"Great care should be used to avoid leaving cats in the same room with sleeping babies, lest they suck their breath."

That is the silliest invention ever made. If a cat should thrust its nose into the mouth of the sleeping babe, as it is said to do, it must die of suffocation as quickly as the baby would. This absurdity probably obtained its currency from the fact that cats love a warm place, and in a cold room might lie over the baby's mouth and so suffocate it.

THE FIFTY-FIRST ANNIVERSARY.

The dentists of Connecticut do not forget their honored dead, nor cease to render them homage on every appropriate occasion. A year ago we were all engaged in celebrating the fiftieth anniversary of the discovery of anæsthesia. The fifty-first return, on the eleventh of December, was observed by the Quonehtacut Dental Club, in Hartford, which met for a dinner and memorial speeches. There were present Drs. James McManus, Geo. L. Parmele, Charles McManus and Henry McManus, of Hartford; Drs. E. S. Gaylord and D. A. Jones, of New Haven; Civilion Fones, of Bridgeport; Charles P. Graham, of Middletown; E. Prentis, of New London; A. C. Fones and C. W. Strang, of Bridgeport; J. Tenney Baker, of Wallingford; W. Jarvis Rider and W. H. Rider, of Danbury. Dr. E. S. Gaylord, of New Haven, president of the club, was toastmaster. The invited guests were Governor Coffin and Charles T. Wells. Governor Coffin was elected an honorary member of the club. Letters of regret were read from Drs. C. C. Baker, of Meriden, and R. W. Browne, of New London.

CRIMINAL CARELESSNESS.

A singular scene was witnessed in Buffalo recently, which illustrates not only the criminal recklessness with which anæsthetics are administered by incompetent men, but also the heedless rashness with which people will risk their lives by employing them. A young woman boarded a street car with extreme difficulty, and by the help of the conductor. She was hysterically weeping, and was exceedingly unsteady in her gait. Blood was oozing from her mouth, and her dress was disarranged. Once in her seat, she began to sink into a comatose state, when some of the people in the car endeavored to arouse her. This was done only with considerable effort, but she was finally made sufficiently conscious to say that she had been in the office of an advertising dentist, and that he had given her an anæsthetic and extracted some teeth, and then started her out. All this information was obtained between the intervals of semi-unconsciousness into which she was continually falling. Her destination was learned with difficulty, and she was assisted from the car only to fall prostrate in the street. She was placed in the charge of a policeman, who assisted her to the house in which she was a servant, and where she was left.

Z-z z-z-z-z.—There is blood on the face of the moon. Things wear a ruddy aspect. Wild, wandering Wills-o'-the-Wisp, and mad, malevolent meteors flash athwart our heaving heaven. Minatory monsters menace, and chaos yawns wide its gaping mouth. With the valiant Pistol we rise and swear "All Hell shall stir for this." Only in blood, or at the least, wine of deepest ensanguined hue, can this deep, dark, doleful debt be washed away. Listen, oh Earth, and give ear oh ye morning stars! The editor of *The Dominion Dental Journal* scandalously suggests, yea, artfully alleges, that the editor of this journal is *fat*. Oh ye Gods on high Olympus perched! Fat! Fat!! Loaded down with gross material Fat! H-a-h! If this be not promptly resented, soon will he indulge his sardonic impulses in hinting that, like the good Falstaff, we grow *old* and fat. Fat! We resent the imputation. We are but stoutly stalwart, and if that pampered presumptuous pet of Parnassian Polymnia does not modify his base charge, we may give him convincing proof of the character of our rotundity. Fat! A-r-r-r-r.

WHAT A FUTURE.—North America, as compared with Europe, has more than twice the number of square miles in its surface, while it has less than one-fourth the population. It is capable of supporting nearly as large a number of people, and so when it is as densely populated as is Europe today, it will have eight hundred millions. The number of dentists at that time cannot be less than two hundred and fifty thousand, the existence of every one of whom will be charged to the five hundred colleges that will then, apparently against the wish of the profession, and in the face of every discouragement, be striving to educate them. All this rests upon the supposition that the present conditions and tendencies are to be perpetuated.

AN ANNIVERSARY.—The dentists of Philadelphia, on the evening of Monday, December 16th, celebrated the fifteenth anniversary of the organization of members of the profession in that city into a dental society for the advancement of professional education. A meeting and banquet was held at the Continental Hotel, under the auspices of the Pennsylvania Association of Dental Surgeons, represented on the committee by Drs. W. H. Trueman, T. F. Chupein and H. F. Roberts; the Odontological Society, represented by Drs. L. A. Faught, Alonzo Boice and I. N. Broomell, and the Academy of Stomatology, represented by Drs. James Truman, Robert Huey and Henry Register. The chairman of the committee on invitations was Dr. J. D. Thomas.

CHICAGO, Ill., December 2, 1895.

To the President of the Senior Class of the Philadelphia Dental College, Philadelphia, Pa.:

DEAR SIR,—Because of the high tribute paid to the memory of the late Dr. James E. Garretson, before our class, by our worthy dean, Dr. Truman W. Brophy, and because of the further fact, that we with yourselves feel the loss of so grand a support to our chosen profession, this class, by unanimous vote, passed the set of resolutions which I hereby enclose to you.

We trust that they will be fraternally received by you, and that they will feebly express the deep sympathy which every member of this class feels for you in the loss caused by the death of Dr. Garretson.

Fraternally yours,
E. H. VARNUM,
President Senior Class, Chicago College of Dental Surgery.

Resolutions passed by the Senior Class of the Chicago College of Dental Surgery:

WHEREAS, The grim messenger Death has again invaded the ranks of the dental profession and taken an esteemed member, an author, a scholar and patriot, whose ability and invention stand paramount in our profession today; therefore, be it

Resolved, That in the death of the late James E. Garretson, M. D., D. D. S., the profession and the Philadelphia Dental College have sustained a loss which each member sorely feels. His quiet, dignified manner and honesty of purpose, have left an impression on all who knew him; be it further

Resolved, That we, the Senior Class of the Chicago College of Dental Surgery, extend our sincere sympathy to the Senior Class of the Philadelphia Dental College in this their hour of sorrow; be it further

Resolved, That these resolutions be placed on the class records, and a copy be sent to the said Senior Class of the Philadelphia Dental College; also to the several journals for publication.

(Signed),
F. A. BALLARD,
W. F. GRIFFITHS, JR.,
ASHLEY M. HEWETT,
FRANK S. LOMBARD,
FRANK F. SNEDECOR,
Com. Senior Class of '96.

CHICAGO, Dec. 2, 1895.

SOUTHERN DENTAL ASSOCIATION.

The twenty-seventh annual meeting was held in Atlanta, Ga., November 5th, 6th, 7th and 8th, 1895. There was a full attendance, and many interesting papers and reports were presented. The officers elected for the ensuing year are:

President—John S. Thompson, Atlanta, Ga.
First Vice-President—L. P. Dotterer, Charleston, S. C.
Second Vice-President—W. E. Walker, Bay St. Louis, Miss.
Third Vice-President—T. C. West, Natchez, Miss.
Corresponding Secretary—E. P. Beadles, Danville, Va.
Recording Secretary—S. W. Foster, Atlanta, Ga.

SPECIFIC REMEDIES.—We are all familiar with the story of the botanical physician who used but three remedies, made from infusions of the bark of the same tree. If it were peeled upward it operated as an emetic, and the infusion was called hiloborum. If it were peeled downward, it operated as a cathartic, and became lobohirum. But when the bark was taken off around the tree, the infusion became that virulent poison hilobustem. This sounds a little absurd, but there are a great many dentists who, if we may believe their utterances in dental meetings and journals, rely almost exclusively upon their own system of hiloborums, lobohirums, and hilobustems.

HEMORRHAGE.—Otto Arnold, D. D. S., of Columbus, Ohio, in a paper entitled "Alveolar Dental Hemorrhages," read before the Tri-State dental meeting, says:

My universal method of procedure in the management of hemorrhage following tooth extraction, is to have the patient rinse the mouth freely with hot water. This encourages free and uninterrupted bleeding from the wound, and stimulates a normal reaction in the tissues, soon followed by a natural cessation of the hemorrhage.

If any considerable amount of laceration has taken place, I attempt to replace the tissues by compressing with the fingers, or stitching into a position any pendant of the gum, prescribing as a dressing:

℞ Tannic acid, ... gr. xx.
Listerine, ...
Aqua Dest. *aa*, ... ℥ iv.
M. Sig.—Apply frequently to the wound.

AS AN OBTUNDANT.—Dr. F. F. Van Woert, of Brooklyn, uses a 50 per cent. solution of sulphuric acid as an obtundant for sensitive dentine. He discovered it by accident, while endeavoring to open the pulp canals of a devitalized tooth with the acid solution. The rubber dam was over the dead tooth, and also over a carious bicuspid which stood next it. In some way the solution got into the cavity of the living tooth, which he had in vain been striving to excavate. To his surprise, he found that the tooth which had been agonizingly sensitive, was now completely obtunded. Since that time he has been using it with very gratifying results, although not in every case with complete success. Usually, however, it enables him to excavate painlessly. He uses but little at a time, and as the affinity is soon satisfied it becomes self-limiting and will do no harm. If too much is used, it can be readily neutralized with a solution of soda bicarbonate.

SALT.—Under the Province of Gallicia, in Hungary, there exists a bed of pure rock salt 500 miles long, 20 miles wide and 250 feet in thickness. Consider what a sea once existed there, and how many ages of evaporation were required to deposit such a mass. A considerable portion of Western New York is underlaid by a great stratum of the same material. What effect has the abstraction of these immense quantities of salt had upon the condition of the sea water of today?

A DISCLAIMER.—Dr. A. P. Southwick desires to say that he does not approve the publication of any testimonials to the virtues of any amalgam or other special preparation of tooth-filling materials which may have appeared over his name. While he may use such material in his own practice, and perhaps verbally express a favorable opinion, it is another matter when it is published to the world by means of circulars.

PACIFIC COAST DENTAL CONGRESS.—The general committee of this body has determined that the next Congress shall be held in San Francisco, in August, 1897, and that the American and Southern Dental Associations shall be invited to meet at the same time and place, to hold separate or joint sessions as shall be deemed best.

WOMEN AS CHEMISTS.—It is reckoned by good British authority that there are not more than one hundred women chemists in England, most of whom are dispensers in hospitals.

THE DRUG TRADE.—There are more than 300,000 persons, according to careful estimates, connected with the drug trade in the United States.

THE

DENTAL PRACTITIONER

AND ADVERTISER.

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PHOTOGRAPHY THROUGH APPARENTLY OPAQUE BODIES.

BY A. L. BENEDICT, A. M., M. D.

Associate Editor *Medical and Surgical Reporter;* Lecturer on Diseases of the Digestive Organs, Dental Department, University of Buffalo.

It is obviously premature to present an article on such a subject as the above without disclaiming the possession of such knowledge and experience as would warrant dogmatic assertions, and without reserving the right to modify whatever opinions may be expressed. In fact, only the request of the editor of this journal has induced me to exhibit to a large and critical circle of readers, views and opinions in their present state of crudity.

The popular press and various scientific periodicals have disseminated information as to the experiments of Prof. Roentgen and his imitators, in photographing bodies apparently concealed by opaque substances, such as wood, flesh, paper, cloth, etc. He has used as an illuminator (according to the favorite hypothesis at present, the term must be considered figurative, though some experiments to be detailed later tend to show the literal adaptability of the word) one of Crookes's vacuum tubes, rendered phosphorescent by means of an interrupted current of tremendous voltage derived from an induction coil. Crookes's tubes are familiar to all who have attended illustrated lectures on electricity, and are themselves merely a modification of Geissler's tubes. For practical as well as theoretical purposes, an ordinary incandescent-light bulb with broken filament may be considered a Crookes's tube. However, some incandescent bulbs have not had the air exhausted to any degree, and others are easily broken by the high tension spark. In his first experiments, Roentgen found that the phosphorescence of a Crookes's tube was reflected on a screen of paper charged with the cyanide of barium and platinum, a salt of remarkable stability and phosphorescence. Subsequent experimentation showed that this sympathetic phosphorescence was excited even when the tube was wrapped in black paper, or some similar material. In fact, most substances were found to be more or less permeable to the rays from the tube, though the heavy metals were so only when interposed in thin sheets. Aluminum in a thickness of 15 millimeters only diminished the fluorescence, and wood was almost absolutely transparent in the thickness of an ordinary plank. The hand, held before the tube, was faintly silhouetted on the screen, the bones shown as if drawn in charcoal, and a gold ring as an almost absolutely black mark. In short, we may generalize to the extent of saying that most, or all bodies of low specific gravity, are quite permeable to these rays, while denser bodies are less so.

We can readily imagine that the desire to preserve so remarkable an apparition as that seen on the screen, was almost instantly succeeded by the thought of employing the photographic plate, which had already been used to record, not only ordinary light rays, but those below and above the visible spectrum. Purely as a matter of convenience, so that daylight need not be excluded from the laboratory, the plate was wrapped in black paper or cloth, so as to exclude the ordinary rays of light. The discovery, though little more than a month old, has already borne fruit in enabling the surgeon to locate bullets, needles, etc., imbedded in the tissues. The writer, though naturally more interested in the application of the new art to the recording of contours of the stomach, liver, intestine and pancreas, and the detection of foreign bodies, gall stones, etc., —and experiments both by the writer and others have already demonstrated the disappointing fact that gall stones are too transparent to the Roentgen rays to leave a plain impression on the negative—desires in this preliminary paper to call attention to the possible usefulness of photography to dentistry.

Considerable speculation has arisen as to the nature of the Roentgen rays. The discoverer himself, though advancing the theory that they emanate from the cathode of the tube, declines to commit himself as to their nature, but uses the algebraic expression, "X rays." The writer may be pardoned in some theorizing as to the essential characteristics of these rays. All forms of photography and, probably, all forms of phosphorescence, depend on chemical changes excited by vibrations technically known as actinic, and which are for the most part—at least so far as they are at present known—visible. Comparing the various vibratory forces, we find that acoustic waves are closely analogous to ordinary gross waves of liquids, rising and falling in a direction transverse to that of progress. Radiant heat, light, and actinic rays, however, have an oscillatory motion in the same line as that of progress. Thus, we may compare these vibrations to those set up by pulling, and then suddenly relaxing, a long spiral spring, so that the backward and forward wave moves against or with the general impetus of the vibration. The objective characteristics of heat, light, and actinism overlap, so to speak. Heat, when it reaches a certain temperature or rapidity of vibration, begins to become visible as a dull red light, which increases with the temperature, till at white heat we have a mingling of all the rays of the spectrum. Light, however produced, is accompanied by more or less radiation of heat. The practical experience of every photographer teaches that a moderate amount of red, orange, or even yellow rays, have an almost imperceptible action on a photographic plate; yet, by peculiar methods and longer exposure, even these rays may record themselves on a negative, and we may go still further and actually photograph—or actinograph—invisible radiant heat. Although we naturally associate photography and actinism with the more rapid vibrations of light that lead up to the violet end of the spectrum, ultra-violet, and therefore invisible rays, had been photographed before the discovery of Roentgen.

With this introduction, I wish to hazard the opinion that the X rays have nothing directly to do with electricity, although produced by it. In the same sense, we may say that the incandescent, or the arc lamp, does not throw out electric rays. Whether the Roentgen rays are absolutely beyond the range of human vision or not, we cannot yet say. I believe, however, that they are at least intimately associated with visible light rays. However, I would go a step farther and declare the a priori probability of the essentiality of actinism in these rays, whether some or most of them are visible, or whether all lie beyond the violet. In a certain sense, we may call these rays light rays. There are some ears which appreciate the lowest notes of an organ, and the throb of a fire engine, pumping slowly, as tones, while to others they are merely successions of beats. Again, there is an adjustable whistle which may be keyed to a shrill note, and the pitch raised higher and higher till we reach a point at which some ears fail to hear a sound, while others still *hear* the vibrations. Going beyond this point, we may show that the whistle still gives forth vibrations, differing in no other way than rapidity, from ordinary acoustic waves. Are these vibrations sound or not? The answer must depend upon a use of terms. We know that some eyes are equally affected by light rays of all vibrations—that is, there is no differentiation of color. It is also highly probable, though not easily proven, that there are tints of dull red and of faint violet which are visible to some and not to others. In other words, certain rays differing in no way from light, save in rapidity of oscillation, may be invisible to some eyes, or even to all, and yet be properly included under the same physical classification. Whether the Roentgen rays are all invisible or not, seems doubtful.

Thus the writer has, by long exposure, photographed objects in front of an arc light, through the vulcanite plate-cover, and the same experiment, with still longer exposure to an incandescent light, also produced an image. We can readily imagine, however, that the rays of more rapid vibration will penetrate farther than the slower ones that are visible to the eye, just as a saw drawn rapidly back and forth will go through wood more quickly than one moved slowly, though with the same pressure. In order to determine whether the rays were essentially connected with electricity or not, the writer exposed a protected plate—the hibernicism can scarcely be avoided—to the flame of a Bunsen burner, and succeeded in blurring the negative, though not sufficiently to produce a picture, even after four hours. Sunlight will produce a sharp silhouette through the vulcanite cover in fifteen minutes or less, though the writer has not succeeded in thus photographing the bones of the hand.

The writer's experiments have been made, not so much with a view of repeating those of Roentgen and his followers, as of determining the nature of the rays, and demonstrating possible modifications of the method. Thus, none of the photographs obtained have been of practical value, although some of them are distinct and interesting as showing what can be done. These experiments point to the following conclusions: Any brilliant light has the power of penetrating apparently opaque bodies, but so slowly and imperfectly as to be devoid of diagnostic value to the physician and dentist, unless very considerable improvements in technique are effected. Probably any method, electrical or not, which will produce rays corresponding to the upper end of the visible spectrum and ultra-violet rays, will be applicable in obtaining silhouettes of dense bodies through bodies of low specific gravity, whether the latter are translucent or not.

My own experiments have naturally had the ultimate object of securing skiograms of the stomach, liver, and adjacent organs. I have been disappointed in finding, both from original and recorded experiments, that gall stones and most soft structures, and pathological products, are so penetrable as to leave no trace on the negative. However, I believe that a little ingenuity will enable one to obtain practical results in the investigation of these organs. In the present paper, I wish to allude more particularly to what may be expected of the new discovery in its relation to oral diseases. In the first place, it must be evident that the photographic plate, or preferably the source of radiation, must be placed inside the mouth, in order to prevent the double shadow that would result from an attempt to photograph through both cheeks. Even the incandescent light requires an exposure of two or three hours; yet this would be entirely too hot for use inside the mouth, unless protected by a rubber bag of water, with inlet and outlet tubes, according to the method proposed by

Turck for transillumination of the stomach. Edison, in reply to a letter of inquiry, expresses the opinion that the Crookes's tube would be highly dangerous to use inside the body, and the fact that the current sometimes ruptures the glass bulb, throws doubt on the feasibility of protecting the tissues from the lightning stroke of a misdirected electrical discharge. I believe, however, that either the static machine or some of Tesla's apparatus, may be used to secure a sufficiently rapid interruption of the current, so that it will not be dangerous in spite of tremendous voltage. Granted that a safe and efficient source of radiation may be inserted in the buccal cavity, we may expect to find the bones and teeth appearing like crayon drawings, while fillings, unless of gutta-percha, etc., or of soft amalgam, will show as absolutely black marks. In determining whether a root has been filled, as in cases in which the patient's account of previous operations is obscure, or when the dentist wishes to test the thoroughness of his own or some one's else work, we may expect practical results. Again, concealed cavities may probably be detected by a lighter shadow than would be anticipated from the thickness of the tooth. It should be observed in this connection, that mucus, detritus of food, etc., in the intestine and stomach, leave no image on the plate. Skiography may also be of service in diagnosing tumors of the alveolar arches. Thus, with a palpable swelling of the jaw, which gives an unusually black tracing, we may connect some impermeable growth, such as an osteoma, or embryonic tooth. On the other hand, a swelling of the same size, appearing no darker, and perhaps lighter, than surrounding normal bone, would be diagnosed as a cyst, bone abscess, or some similar soft mass. The location of metallic foreign bodies, in and about the walls of the mouth, may be accepted as possible from the practical results already obtained in the surgical investigation of other parts.

In order to meet the demands of the printer, the writer is compelled to submit this article without waiting for the development of experimental studies, which bid fair to afford practical results and to justify or disprove the hypothetical speculations which mark the present status of this new branch of medical art.

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DENTAL CURIOS.

BY GEORGE L. PARMELE, M. D., D. M. D., HARTFORD, CONN.

It has been my custom for many years to note, in reading, all curious matters relating to teeth and their surroundings.

The following are some of the items relating to early use of picks, brushes, and powders, in the days of yore. The collection, which, for want of a better name, I class as Dental Curios, while of perhaps no practical value, affords me considerable pleasure in rooting around in odd nooks and corners. It is my purpose some day to publish this dental bric-a-brac, so that it may be preserved

> "'Gainst the tooth of time
> And razure of oblivion"[1]

for the lovers of antiques, and that it may be available to some future historian of dental progress.

It is astonishing in what unexpected places these items appear—old newspapers, almanacs, medical works, toilet guides, novels, plays, manuscripts, etc., etc. I would esteem it an especial favor if any reader, stumbling upon such curious items and myths as are below mentioned, would guide me to them so that they may be added to my collection; and pray do not hesitate, thinking I may already have the item you have found, for though seemingly a "chestnut" to you, it may be new to me, and of value to illustrate or throw light upon some other point already recorded.

The following list will serve to show a few subjects I am seeking:

Curious and early advertisements.
Tooth-brushes, when first used.
Ancient names given to teeth.
Ancient mention of fillings.
Ancient mention of artificial teeth.
Curious anomalies of dentition.
Charms to preserve the teeth.
Identification of the dead by the teeth.
Proverbs, phrases, maxims, etc.
Teeth of celebrities.
Charms to cure toothache.
Teeth as charms to cure other maladies.
Quotations from all kinds of literature concerning teeth.
Superstitions about the teeth.

As tooth-picks seem to be of greater antiquity than brushes, we will commence with quotations concerning them.

The earliest mention I find, is 289 B. C., when it is said Agathocles was poisoned by a medicated tooth-pick, handed him after dinner.[2]

The following passages from Martial also indicate their early use:

> "Dentiscalpuim Lentiscum melius:
> Sed si tibi frandea cuspis
> Defuerit, dentes penna levare potest—
> *Book xiv., Epigram xxii.*
> Ad Eculanum de calvo et edentulo
> Medio recumbit imus ille qui lecto
> Calvam trifilem segmentatus unguento
> For dil que tonis ova laxa lentiscis
> Mentilur, Esculane non habet dentes."

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[1] Measure for Measure. Act V., Sc. 1.

[2] Knight's Mechanical Dict.

In the time of Kings Henry VIII., and Edward VI., of England, (A. D. 1509 to 1550) the long hind-claw of the bittern was a most excellent tooth-pick, for, besides its functions as such, it had (if the wisdom of our ancestors was infallible) the mighty meritorious property of preserving the teeth from decay.[3]

In Elizabethan times (1558) the court gallants, and probably the citizens, used spoons to carry their meat to their mouths. In Ben Jonson's "Every Man Out of His Humor," (Act IV., Sc. I.) Fallace, the Citizen's wife, cries "O Sweet Fastidius! O Fine Courtier! How cleanly he wipes his spoon at every mouthful of any white meat he eats, and what a nice case of pick-tooths he carries about him still." The gallants of those days used to carry around with them, hung to their girdle, elaborate cases of tooth-picks, and after a custom introduced from abroad, used it ostentatiously at meals and other times by way of distraction.[4]

Southey quotes from Prologue to Lyle's Midas Old Plays, Vol. I., 249, (during reign of Elizabeth, 1558 to 1603) as follows: "Inquire at ordinaries, there must be salads for the Italian; pick-tooths for Spaniards; pots for the German; porridge for the Englishman."[5]

In Higgins's "Nomenclator" (1585) you may find "Dentiscalpium—Cure-dent," a tooth-scraper or a tooth-rake.[6]

Decker, in the "Gull's Horn Book," (1609) gives the following suggestion to a coxcomb: "After dinner you may then be seen for a turn or two to correct your teeth with some quill or silver instrument, and to cleanse your gums with a wrought handkerchief."[7]

In the early days Lentisk wood was much used for tooth-picks. Dr. Johnson quotes from "Mortimer's Husbandry" (1707) of this wood, that it is a beautiful evergreen, the mastick or gum of which is of use for the teeth or gums.[8]

Rabalais says, Gargantua used a young walnut tree, and also that he "picked his teeth with an elephant's tusk, and did everything else in the same large way." He also says, Gymnast "was employed in making tooth-picks of Lentisk."

This wood is said to take a highly ornamental polish, and tooth-picks of it were worn in the hat by men, and in the hair by ladies.

The following quotations from various sources show the tooth-pick to have been an article of common and public use:

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[3] American Naturalist, Vol. III., 176.

[4] N. & Q. 4th S., Vol. VI., 56.

[5] Common Place Book.

[6] N. & Q. 7th S. VI., 355.

[7] N. & Q. 7th S. VI., 355.

[8] N. & Q. 7th S. VI., 355.

In Cynthia's Revels, Act II., Sc. 3 (Merc. picturing Amorphus, a traveler): "One made out of a mixture of shreds and forms. He walks most commonly with a clove or pick-tooth in his mouth."

And in another place, same scene, Amorphus says: "If you had but so far gathered your spoils to you, as to have taken up a rush (when you were out) and wagged it thus—or cleaned your teeth with it, or but turned aside, etc.

Here is one from "King John," Act I., Sc. 1: "Now your traveler, —he and his pick-tooth at my worship's mess; and when my knightly stomach is sufficed, why then I suck my teeth and catechise my picked man of countries. (My traveled fop)."

Overybury in "Characters" says of an affected traveler: "And his pick-tooth is a main part of his behavior." [9]

Lydgate in his "Stans Puer ad Mensam" (an adaptation from Sulpitius) enjoins his page or serving boy "to resort to the lavatory before he proceeds to discharge his functions at the board, and among other precepts, not to speak with his mouth full, and he is not to pick his teeth with his knife. [10]

Pen-knives and bowie-knives, it is said, have been used as tooth-picks, the latter being sometimes known as "Arkansas tooth-picks," and inhabitants of Arkansas are sometimes nicknamed Tooth-pickers.

Some author, I forget whom, says: "Any Yankee can whittle a toothpick from a pine log."

In "Much Ado About Nothing," Act II., Sc. 1, Benedict says: "I will fetch you a tooth-picker now from the farthest inch of Asia."

According to Southey's "Doctor," "Taylor, the Water Poet," said:

"I see no cause but men may pick their teeth,
Though Brutus with a sword did kill himself."

Magnetic tooth-picks were used at the end of the Seventeenth Century. [11]

The "Tooth Gare" of the Anglo-Saxons was made anciently, as now, of silver, wood, quill, and what-not. [12]

Southey, in discoursing on pockets and various substitutes in those who wear no clothes, says: "Ogres, who are worse than savages, and whose ignorance and brutality are in proportion to their bulk, are said, upon authority of tradition, when they have picked a stray traveler or two more than they require for their supper, to lodge them in a hollow tooth as a place of security till breakfast, whence it may be inferred that they are not liable to toothache, and that they make no use of tooth-picks."[13]

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[9] N. & Q. 4th VI., 56.

[10] See Hazlett's Old Cookery Books.

[11] Knight's Mechanical Dict.

[12] Knight's Mechanical Dict.

In the "Birth of Mankind," "set forth in English by Thomas Raynalde, Phisition" (London, 1568,) he advises if the teeth "be very yellow and filthie, or blackish, let a Barber scour, rub, and pick them cleane; it shalbe very good to rub them every day with the root of a mallow, and to pick them cleane that no meate remayne and putrifie between the teeth."

Sancho Panza says to Adres (Don Quixote): "For thou must know, friend of mine, that we, the squires of knight's-errant, often pick our teeth without our dinner."

Tooth-picks were sometimes called tooth-rakes.

When I started out with these selections from my notes I intended to continue with others about tooth-brushes, washes, dentifrices, and dental hygiene generally, but as I find the subject very extensive, and as it might become tiresome, I will desist, and only add that I am at present interested in the date of the introduction of tooth-brushes. The earliest authentic record I have seen of them is 1729, but there is another mention made as early as 1640; still there is room for an error in this earlier date, owing to a possibility of faulty translation, for the act of rubbing, scouring, and polishing the teeth with sticks, rags, powder, etc., may have been interpreted by the translator *brushing.*

In some of the old books published during 1600, directions are given for preparing certain "roots that are used to clean the teeth." Lucerne and liquorice roots are specified. "They are to be boiled and cut in pieces of six inches long. Each end of the root is then to be split with a penknife into the form of a little brush, and they are dried slowly to prevent splitting." "They are used as follows: One end is moistened with water, dipped into tooth-powder and rubbed against the teeth until they look white."

Brushes similar to these are at present used in some parts of Turkey. Less particular Turks, however, use ordinary European tooth-brushes, but as even the most lax among them look upon the pig, and all belonging to him, as vile and unclean, they would as soon think of defiling their mouths with a Russian bristle-brush as of eating a pork chop or a rasher of bacon.

The shop-keepers, therefore, swear by their heads and the souls of their fathers and mothers that the hair of which his brushes are made grew on the back of a camel, the cow, or the horse.

One thing more and I am through: "The Toilet of Flora for the Use of Ladies" (London, 1784) gives explicit directions for making an article described in Harris's Dental Dictionary under Tooth-polisher (Argillaceous), and said to have been invented by Dr. L. S. Parmly.

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[13] Southey's "Doctor."

The following sentence occurs at the beginning of an old Hindoo Book:

"The past is full of light, although few rays have come down to us: we are like children born at midnight—when the sun rises we think yesterday never was." Thus we grope through life in mental darkness, when, if we would only go back to the past, we might obtain many a ray to light our pathway and show us where we are.

CATAPHORIC MEDICATION IN DENTISTRY.

BY F. T. VAN WOERT, M. D. S., BROOKLYN.

CATAPHORIC: From the Greek—rushing down; bringing down; having the power to produce motion, as of a liquid through a diaphram in the phenomenon sometimes called electrical endosmosis.—*Century*.

CATAPHORESIS: Pronounced cat-af-o-rē-sis; electric osmosis. Electric osmosis, a difference of level in two liquids on opposite sides of a diaphragm, caused by the passage of an electric current. The higher level is on the side toward which the current flows. The molecules of a dissolved substance are as free as those of a gas, and are subject to analogous laws. It is called the gaseous, or osmotic theory of solution, because the fact that osmotic pressure of solutions of different concentrations follow laws similar to Boyle's, which is that, as a mass of gas is expanded or compressed under constant temperature, its elasticity or pressure per unit of surface is proportional to its density.—*Standard*.

The most prominent of the many wants in the practice of dentistry has been that of a reliable and safe method of producing local anæsthesia. For the perfect sterilization of those teeth which have become pulpless, the pressing demand for something in this line has caused many reputable practitioners to try the secret nostrums which are so common at this time, all of which are unreliable, and the most of them dangerous, saying nothing of the degration of a man's intelligence by using that of which he knows nothing. About two years ago one of the venders of these concoctions called upon me, and tried to get me to use his preparation. I refused, on the ground that I did not know what it was; whereupon he asked me if I knew that the aconite in my case was aconite. I replied that I purchased it from a reputable and legal pharmacist, who was responsible for any mistake in the preparation of the drug, and I was accountable for its proper administration only. This I said is not a parallel, for yours is not a standard preparation, made by one whom the law legalizes to compound drugs; thus any disastrous results that might follow I alone would be held accountable for, even though I knew the exact details of the compound. In short, the standard of dental surgery has been advanced to the high plane of medicine, and it is the duty of those who have the honor to be members of this profession to discountenance anything sembling quackery, and perfect themselves in those things which are practical and scientific, in doing which they must hail with delight the advent of cataphoric medication. The possibilities in this seem unlimited, and while it is in its infancy, practical demonstrations have proven that sensitive teeth, living pulps and the tissues of the mouth, can be made absolutely insensible to pain, and that germicidal and bleaching agents may be introduced into the tubuli, producing results which it would be impossible to obtain in any other way.

Cataphoresis; what does it mean? The analysis of the term is given in a note at the head of this article. Next for the practicability of the method in operative dentistry. The following cases are proof that its action is all that is claimed for it:

No. 1. A gentleman aged 42, with a badly decayed, inferior right second molar, with pulp nearly exposed. After the dam had been applied a 30 per cent. solution of cocaine was placed in the cavity, on a piece of absorbent cotton large enough to fill it without pressure. Then the negative electrode was given to the patient to hold in the right hand, the positive being placed in the cotton occupying the cavity, the current started at one-quarter of a volt, and gradually increased until three and one-half volts had been reached before the patient felt the current. From this it was increased to thirty volts of pressure, and three and one-half milli-amperes of volume, in eighteen minutes, when the tooth was completely anæsthetised, the patient declaring that it felt like a dead tooth.

No. 2. My own son, age ten and a half, with a highly sensitive lower first molar; the results the same as in the first case, but it required thirty-two minutes, with a current from two to thirty volts in pressure, and only one and a quarter milli-amperes in volume. In this case the high resistance of the subject was the cause for the consumption of so much time.

No. 3. A little girl, age eleven years and three months, with the pulp of the first inferior molar exposed, badly congested and aching; at the end of twenty-six minutes the pulp was removed intact, without any sensation whatever. Amount of current used, one and a half to thirty volts, with maximum of two and a half milli-amperes. These are only to show what I have been able to accomplish with the apparatus known as a volt selecter. In fact I have not had a case that would not yield to the influence, if sufficient time was given.

This calls to mind the only protest against the practicability of cataphoric medication advanced by dentists. They say that it requires too much time, and that they cannot get paid for it. Now, if a careful analysis is made of the subject, it will be found that it is a saver of time, and a great relaxation from the tremendous strain under which the operator is placed when excavating a highly sensitive tooth for a highly sensitive patient, particularly in those of children. In my own office I have ceased to look forward to Saturday with dread, for I can accomplish much, and with practically no fatigue, other than that caused by the labor of hand and body. There are many improvements to be made in the small detail of appliances, which time and experience alone can perfect, but the volt selecter is so near perfect that the progressive man cannot afford to wait further developments.

Cataphoresis, in all its varied phases for the amelioration of human woes and pains, is most satisfactorily accomplished by the direct current, taken either from the Edison incandescent electric lighting circuit, or from a battery giving a direct current of 40 or more volts, if the pressure (or voltage) of that current is held in the control of the operator, by an apparatus which enables him to increase or diminish the pressure in small fractions of a volt, and thus to avoid giving pain or discomfort to the patient by electric shocks.

We know from experience that an increase of even one-half of a volt at a time will give pain in a living tooth, and to the sensitive tissues of the mouth, and therefore the control of the voltage must be such that only small parts of a volt may be added at the will of the operator.

We have offered to us now, for the first time in the history of electricity as applied to its practical use for dental operations, such an apparatus as I have described, which places the electric current under complete control, and which enables the operator to increase the pressure of the current in very small fractions of a volt at each possible step, commencing with nothing, and reaching a maximum of 40 or 80 volts, as the conditions presented by the patient and the case may require; and yet, having as the strength of the current for work on the patient, from $\frac{1}{160}$ of a milli-ampere to 250 milli-amperes (or, if it is expressed in amperes, from $\frac{1}{160000}$ of an ampere to one-quarter of an ampere) according as the operator may desire to select for use in each individual case.

The apparatus I refer to is the "Geo. M. Wheeler Fractional Volt Selecter," manufactured by the Electro-Therapeutic Company, 32 East 23d Street, New York City; and from actual tests made by me in my own practice, I know that this selecter does accomplish that which its name implies, viz.: The control of the pressure of the electric current in small fractions of a volt.

This selecter is not a rheostat, cutting down the milli-amperes only without affecting the voltage, but rather the contrary (which no mere rheostat or adapter can accomplish), the holding in check of the pressure without diminishing the necessary working strength of the current.

It is an attractive instrument in appearance, and is very simple in its operation and manipulation, so that one not possessing much skill in, or knowledge of, the electrical apparatus, can learn to use it quickly and easily.

If it is employed in connection with the street supply wires, an attaching plug is merely screwed into a lamp socket; if it is used with the "Cataphoretic Battery," made by the same company, then the connection is made by joining two wires together. The binding posts to which the cords and electrodes are to be attached are quickly seen, and their purposes understood; the switch for turning on the current through the selecter, the knob by which the current is increased or diminished by a screw meçhanism, and the dial which shows the number of volts in use, are all quickly observed and their respective uses comprehended.

The "Cataphoretic Battery" mentioned, gives a current direct of 40 volts (or more if the number of cells is increased), and, if the direct Edison light current cannot be obtained, is the next best choice for furnishing the current for all operations by "cataphoresis." It is small and easily moved, and will last two years or longer, if used with a selecter for cataphoric work only; hence it is very economical as well as efficient.

That further improvements will be made in the application of this triumph is, of course, conceded, but the apparatus is now sufficiently perfected to warrant its immediate purchase. In the next number of this journal I will endeavor to give a further account of my experience with Cataphoric medication.

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FROM THE COUNTRYMAN'S STANDPOINT.

BY MYRON D. JEWELL, D.D.S., RICHFIELD SPRINGS, N. Y.

Read at the Union Meeting of the Sixth, Seventh and Eighth District Dental Societies of the State of New York, held in Binghamton, October, 1895.

> Give me a cottage on some cambrian wild
> Where, free from cities, I may spend my days.
> —HENRY KIRK WHITE.

No doubt there is in the above quotation a certain note of joy, an harmonious chord which excites a sympathetic response within the breast of many a weary, brain-fagged devotee of the ceaseless round of excitement inseparable from an active city life.

But considered abstractly, I am inclined to surmise its author was not a dentist, else the sentiment expressed would never have escaped him. Or if, perchance, he may have been numbered amongst the disciples of our chosen vocation, the sonnet from which I have culled my text must have been written just subsequent to his retirement from a lucrative city practice, with his "blushing honors thick upon him," ready to hie him to some quiet dell, there, as he says, to

> " 'lay me down to rest, where the wild wave
> Shall make sweet music o'er my lonely grave."

It is an undeniable characteristic of the human soul to aspire to something higher than itself, to seek. to elevate itself, or be elevated into an environment more congenial, to widen the horizon of its sphere of observation, increase its power of assimilation and enlarge the scope of its plane of action. This tendency is equally true of matters pertaining to the material and the spiritual realms. To deny this would be to give the lie to all spirit of adventure or investigation, and relegate mankind to the level of the brute. Thus, it is to this principle we owe whatever of advancement the world has ever made in science, art, literature—aye, in every walk of life, from the humblest to the most exalted.

What wonder then that the rural out-hanger upon the body politic of the " tip-top-blue-blossom " branch of medical science, vulgarly known as dentistry, should view with envious eye the superior facilities for culture and advancement, with which his city brother is ordinarily surrounded, and which must, from force of circumstances, be denied him. So strongly does this phase of the situation force itself upon him, that he is prone to exclaim, with Manfred, after his interview with the witch of the Alps:

> "We are the fools of time and terror; days
> " Steal on us and steal from us; yet we live,
> " Loathing our life, and dreading still to die."

Nor have I overdrawn my picture. The average country practitioner will agree with me in the statement that in the race for knowledge and skill in our now respectable calling, the city co-laborer who has the desire to advance and seeks to improve the opportunities which are constantly about his pathway, moves in a realm of action so far above that of the average countryman as almost to belong to another order of beings. True, the countryman has opportunities, and forsooth improves them, but it is in the character and magnitude of the city brothers' opportunity that the distinguished difference lies.

I will admit that we are in great measure the arbiters of our own destinies, as Cassius exclaims:

> " Men at sometimes are masters of their fates—
> The fault, dear Brutus, is not in our stars,
> But in ourselves, that we are underlings."

But it is not so much a question of principle as of degree, and this is the point I am aiming at, viz. : that the citizen enjoys greater freedom and better advantages; that the countryman, though applying himself with all consuming zeal, falls far short of the ideal, simply because the pabulum upon which he must of necessity subsist, is so poor in nutriment that he can be but a " Lean Kine " at best. The social element, professional and otherwise, in a citizen's life, is one of the chief factors in the process of his refinement. This feature is essentially the prerogative of the citizen, as I have so often tried to establish in my eulogies of the principle of the "frequent assembling of ourselves together."

It is only on occasions like that which brings us together today, that once or twice a year the countryman has the privilege of meeting his fellow-practitioners for a season of social interchange of ideas and general improvement, whereas the citizen, in his dental club, and frequent local gatherings, keeps the edge of his perception keen and his mind in that active, aggressive state which we countrymen so covet, yet fail to emulate.

I believe there is no class of beings on the face of this mundane sphere so susceptive of improvement as dentists—American dentists. They are in the forefront of the battle, and holding their vantage ground as no other branch of the science of the healing art; and further, I affirm the prime factor in the development of this condition to be the social element which became so prominent when dentistry burst from its chrysalistic state, and shoving back the bolts of its laboratory doors let the free sunlight of fraternal intercourse warm the coccles of her heart, to the unfolding and upbuilding of a noble fraternity based upon a new gospel of the universal brotherhood of dentists.

"High is our calling friend! Creative art
Demands the service of a mind and heart."

But there is another phase of the social element that has much to do in promoting or retarding the upbuilding of a professional life, and that is the constant influence of the life and charactcr of our patients, which no one can successfully counteract. As well might one attempt to pilot the Great Eastern through Hell Gate with a canary bird's wing for a rudder, as to attempt to stem the tide of public nescience and unsympathetic asinine cupidity by an effort at "education of the masses." In this particular the citizen of any standing enjoys opportunities far superior to those of the countryman.

If there is a class of dentists which more than another deserves the unqualified consideration of the profession at large, it is that class of country practitioners who try to live according to the code of ethics and the dictates of an enlightened conscience, while fighting the battle of life and striving to steer between the bread-and-butter problem on the one hand, and the cast-iron features of the code on the other, which, like the "devil and the deep blue sea," constantly confront him.

The disreputable element in the dental profession—and his name is legion—is pretty generally and evenly distributed. He bobs up serenely at every turn. Our confident hope in the direction of the extermination of his cosmopolite barnacleship is in the antiseptic influence of a higher education, and the gradual, and we trust it will be uninterrupted elevation of the students' standard of qualification recently inaugurated.

The *trade* instinct is so strongly developed in many individuals as wholly to unfit them for a dignified professional career. I took occasion to enlarge upon this feature of the. problem before the Sixth District Society a year or two ago, submitting samples of advertising cards and circulars. It is a matter in which we are all personally interested, and I know of a no more debasing influence, or a practice which tends more to counteract the efforts of the better class, those who are toiling for the aggrandizement of our profession, than the advertisements of some of the unterrified now in our ranks. Every catch-penny agency one might expect and excuse in the horse jockey and patent medicine man, is resorted to, until it is enough to flush the classic brow of old Cheops himself—or any other Egyptian mummy—with the crimson hue of shame. The pernicious effect of this custom of using printers' ink is, I believe, more perceptible in the agricultural districts than elsewhere, though I opine the city practitioner is not wholly unmindful of its baneful sway. I hold this subject to be one of the burning questions of the day in our profession, and I firmly believe until the society of associated faculties adopts some scheme whereby a graduate shall be bound upon his honor as a gentleman not to resort to such expediencies, our efforts to reach the ideal high plane of usefulness as professional gentlemen will be well nigh futile.

Happy is the individual from whose dream of life the bread-and-butter problem is eliminated. What flights of fancy and what depths of toil! Aye, but there's the rub. Where is he? Particularly in the country. Do you happen to know one such within the rural precints of this broad gubernatorial jurisdiction? I wot not, and more's the pity. O—

"Give me a cottage in some cambrian wild
Where free from cities I may spend my days."

A few pages back I referred to the important bearing upon one's development of the life and character of one's professional associates, and more particularly of our patients. Let us present a pen picture by way of illustration: Enter, the citizen. Good breeding is evident in her every word and gesture. Her greeting is cordial. "Is this Dr. Blank? I am very glad to meet you. Mrs. G—— spoke so highly of you and your work, I would like to place myself under your professional care. When can I make an appointment with you?" Is it overdrawn? But the end is not yet. At the date appointed the patient is at hand, and possibly her first salutation will be, "O Doctor, I was afraid I would be late." In the chair: "Now, Doctor, I want you to do just what you think is best. I place myself in your care."

Does not one's heart leap with the uplift such a patient gives one? Gaze on that picture; then on this: Enter, the countryman. The door opens cautiously, a head appears, with eyes like a scared rabbit, as with visible effort the patient summons courage sufficient to enter. "Good morning, madam." "Mornin'—Say, be you *Mr.* Blank?" "Yes, madam, that is my name." "What do you charge for teeth here? Thought I'd have mine drawn and some false ones put in, if it don't cost too much. Do you pull 'em without pain? Is that the lowest? They told me to go up to Podunk, but I seen Miss Jacobs's teeth that you made, and I thought I would come and see how much you would charge to make some for me *just like them.*" Examination is made; teeth fairly good; filling recommended. "Say, how much more would it cost than to have them pulled?" The usual arguments follow. The patient on leaving volunteers the cheerful statement that she will "think about it; times is hard now-a-days; Dr. Hardscrabble, up to Podunk, agreed to make 'um a good deal less than that."

How ennobling, how pregnant with encouragement! How——Oh——

> "Give me a cottage on some cambrian wild."

Did you never have a patient ask you how long you would guarantee a filling? I have, a thousand times. Did you ever have a patient request you to use the gold that had broken from a contour fitting to fill another cavity, and thereby save him the expense of a second filling? I have. Did you ever give a husband gas for the extraction of a tooth, have him turn around and compel his poor little broken down wife to have hers extracted without, to save expense? I did, years ago, and am *mad* all through, yet. Did you never have a person enter your office crowded with waiting patients, and in a loud tone convey the cheering information that "that there filling you made in my tooth a year ago last 'fair time' has come out?" You know you have.

Elevating, isn't it? What a frenzy of enthusiam these pictures excite. Yes, my citizen brother, you are welcome to your

> "Cottage on some cambrian wild,
> Where, *free from cities*, you may spend your days."

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THE PHYSICAL CHARACTERISTICS OF THE TEETH.

BY THOS. FLETCHER, F. C. S., WARRINGTON, ENGLAND.

In the PRACTITIONER for January, is an article on some experiments of Dr. G. V. Black, detailing results which are neither curious nor unexpected, where they happen to be correctly stated. As an example of the want of ordinary care, may be taken the analysis on page 41, when the "mercury" squeezed out of an amalgam is given to the second decimal, in ignorance of the elementary fact that "mercury" is not and cannot be squeezed out of any amalgam, under *any* conditions. It would be as easy to squeeze water out of sugar after they are mixed. The mass is simply divided into two amalgams, one containing enough mercury to keep it more or less fluid, and the other with a larger percentage of the solid metals. It will not yet be forgotten that I devoted the whole of my time for several years continuously to a series of exact experiments with filling materials and alloys used for the purpose. My experiments were numbered by thousands, and I had plugs under continuous observation for periods extending over many years.

During the whole of this time, I never succeeded in making a single plug, of any ordinary alloy, which could be considered satisfactory. If any excess of mercury had been added, the squeezing out of so-called "mercury" made the results so erratic that the system was entirely discarded at a very early stage. It is also stated on page 43 that "a block of amalgam made with sharp angles will preserve that form for an indefinite period, if it be put away in a box." This most certainly is *not* the case with the majority of amalgams in use at the present time, especially if they are made by the squeezing process. An approach to the shape is retained, but a flat surface made and polished as a flat mirror does *not* retain its flatness. Experiments made in ivory or in teeth are worthless, as regards permanent results. All my trials, for continued observation, were made in glass cavities of from three-eighths to one-half inch diameter.

So far as my experiments go, the system of mixing with excess of mercury and squeezing out, either with leather or during packing, is a great mistake, and the results are never to be depended on. An amalgam made from an alloy requires totally different treatment; the mercury used must be no more than is sufficient to make the *surface* of the grains cohesive; it must be built like cohesive gold. Any excess of mercury working up, carries with it part of the alloy, rendering the plug irregular in texture and composition, and therefore unreliable. The removal of this excess may *perhaps* improve matters, but the irregularity of the result can never be prevented.

An amalgam, properly worked, like cohesive gold, and which will weld, but will not flow, is not liable to the changes which occur when other methods are used, and its value in the mouth can only be tested theoretically by packing in glass cavities of rather large diameter, at least equal in size to the largest plugs ever made in the mouth. That the squeezing-out process will make, in most cases, plugs which last several years in the mouth, is an undoubted fact, but this is not what a good operator would expect with a properly inserted amalgam of uniform texture and composition throughout, and it is an undoubted fact that amalgams, treated in the manner they ought to be, will pack and make reliable sound plugs entirely under water; they will drive the water out, and weld up sound and solid, retaining their shape permanently. That it is easier to daub a paste into a hole, rather than to build cohesive solid grains, is a fact which cannot be questioned, but this is, I think, not the point at issue. Hard grains, shaken in a glass tube with sufficient mercury to amalgamate their surfaces, can be packed and malleted like cohesive gold; and, unlike cohesive gold, this can be done wet or dry. The user of an amalgam should be a builder, not a plasterer.

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AMALGAM AND AMALGAM FILLINGS.

BY G. V. BLACK, M. D., D. D. S., SC. D.

Through the kindness of the editor of the PRACTITIONER AND ADVERTISER, the proof sheet of an article by Thomas Fletcher, F. C. S., Warrington, England, is before me, entitled—"The Physical Characteristics of the Teeth."

In this paper objections are urged to the results which I have obtained in the study of the Silver-Tin Dental Alloys, based on the fact that I squeezed out the surplus mercury, and in that way changed the qualities of the alloy. That is to say; in removing surplus mercury some of the constituents of the alloy will be dissolved in the mercury removed, and possibly the formula will be in some degree changed, because of one constituent being dissolved in greater proportion than another.

I recognize this as quite possible theoretically. It is certainly true that some of the alloy is dissolved in the mercury, but it is also true that the amount is very small in hand mixes, and but very little greater when the mix is ground in a mortar. While in my tables I treated mercury removed as pure mercury, I recognized that it contained some proportion of the constituents of the alloy. But this proportion was regarded as too insignificant to produce a perceptible change in the results given by the formula. No one has yet given careful analysis of the mercury squeezed out of alloys in ordinary mixing, so that we do not know how much metal is carried with it, or in what proportion of the constituents, tin and silver. Some chemist should do this, giving formulæ, proportion of mercury in the mix, how mixed, time of mixing, per cent. of mercury wrung out (with contained metals of alloys) and the per cent. of each metal carried out with the mercury. Information on this point might be useful.

But now to the main point. The author of the paper prefers mixing the least possible mercury with the cut alloy, because he finds results more regular. In all of my trials of this plan two points have been prominent in the results.

First. When the stability of the resultant amalgam was tried under steady, or remittent, pressure, the flow was markedly greater than when mixed with a surplus of mercury, and wrung out dry and then packed.

Second. When mixed with the least possible mercury the same alloy, the condition as to oxidation being the same, (*i. e.*, taken from the same package) the shrinkage was greater than when mixed with a surplus of mercury and the excess squeezed out. In both of these cases the dryness, when the packing is done, is understood to be about the same. I wish it distinctly understood that in my experimental work amalgams were wrung out *dry*, and that fillings were not *plastered into holes*, except when the fact was noted under the title *soft fillings*.

Again, quoting the passage, "a block of amalgam made with sharp angles will preserve that form for an indefinite period, if put away in a box." Mr. Fletcher says: "This most certainly is not the case with the majority of amalgams in use at the present time, especially if made with the squeezing-out process. An approach to the shape is retained, but a flat surface made and polished as a flat mirror does not retain its flatness." This is about right. I was speaking of spheroiding, and of the belief that amalgam fillings *rounded away from margins*, and stated that the rounding of corners did not occur; that they remained as sharp as when the filling was made. But if the filling as a whole shrinks or expands, certainly a perfectly flat surface like that of a mirror will be warped, yet the corners will remain sharp. This leads me again to emphasize the fact that when amalgam is squeezed out with pliers, the central part is heavily pressed, while the margins are not, and fillings from a mass thus treated always warp. That is, if the amalgam shrinks, the shrinkage is irregular. The mass should be wrapped in muslin, and wrung out with all the force that can be exerted with the hands. *Then if the alloy is in good condition no mercury can be removed from it with the ordinary force used in packing.* But if the cut alloy has become oxidized, no force that can be exerted in wringing will make it so dry that mercury will not come to the surface in packing.

As to glass tubes for experimental fillings, I will say that I made a considerable trial of them, and have arrived at the opinion that they are not suited to exact studies of amalgams. If the ink, or analine dye test, is to be used to detect shrinkage, it is by no means sufficiently delicate. If the microscope is to be used, steel is better than glass because a slighter break of margin can be seen, and for micrometer tests glass tubes are not at all suitable. At this date we must have closer observation of all of these matters that can be made with the naked eye examination. The day for thousands of meaningless tests have passed. What we need and must have are tests made with the best of instruments, every possible condition that can be thought to influence results being noted. There are doubtless conditions not yet thought of or suggested that influence amalgams, and it is only by noting all that we can think of as having a possible influence, and performing our work with exactness, making records of every step as it is taken, that we are likely to find these hidden influences. We may rest assured that when we *know* the influences causing irregularity of results, and can control them, we can attain regularity.

Touching the question of squeezing out mercury from the amalgam with instruments while making the filling, I can say with Mr. Fletcher that I have not yet on my records a single filling that has retained its margins without decisive breaks, where that was done. To get the best results with amalgam, it seems to be necessary that the mass be in such condition that it can be firmly packed without bringing softened material to the surface. I have tried every means yet suggested for the removal of this softened material, with indifferent success. True, the more perfectly it is removed the better the filling, but the best filling is made when there is no soft material to be removed.

As to making fillings wet, I hardly know how to speak strongly enough in its condemnation. It is true any tyro can put amalgam into a wet cavity, and it is also true that the amalgam will hold together and will became hard, and it may stay in the cavity for some time. But such a filling will leak all the same, no matter what amalgam is used, no matter how it is manipulated. The *walls of the cavity cannot be perfectly dried by pressing in the filling.* Therefore it will be leaky, as all sub-marine fillings are, and always have been. It is abominable that men of this day and generation will persist in doing such slop work, and call it Dentistry.

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THE GARRETSON MEMORIAL MEETING.

HELD IN PHILADELPHIA, TUESDAY, MARCH 3, 1896.

JAMES E. GARRETSON THE MAN.

BY JAMES TRUMAN, D. D. S.

We have met tonight to do honor to a great man, one of the few whom we would not willingly let die.

I am expected to speak of him as a man known among men, an active force in the great world, increasing its power and ever moving toward a more improved order of existence. We speak of men as though all were equal in duties, responsibilities and power, but the limitations of the majority are all too perceptible, and it is only by contrast that we often are able to mark a higher type, one standing out from his fellows with a force of character, an energy of life and power of analysis, that stamps him as a special messenger of glad tidings to an ignorant world. This I regard as the mission exemplified in the life of James E. Garretson, a man among men. We who knew him best regarded him as the great surgeon, and we have had this phase of his remarkable career ably portrayed by those best competent to judge. We knew him as a practitioner. We dwelt with interest upon his literary productions outside of his purely scientific work. We have made him an authority in many matters connected with pathological conditions of the oral cavity. We knew him as a skillful anatomist, but we must regard as above all these his character as a man.

It is with peculiar satisfaction that I dwell upon this. An individual may be thorough in all the duties allotted to him in life, but if he fails in that higher character, the broad-minded, generous, earnest man, the life is a distinct failure. The world deifies its great men, not in proportion to what they may have known or to what they have done, but in the degree with which this is accompanied by a character without reproach.

Dr. Garretson's life is known to you all. To many, much better than has been given to me. From a very early period I have been interested in him, for we graduated at the same School of Dentistry, though not in the same class. In the hurry of this kaleidoscopic life it is given to but few to continue early personal interests, and the close intercourse so needful for a clear comprehension of character was not ours at that period, but his public career was at no time lost to observation. Throughout it all, it seemed to me, there was a definite purpose. You may call it an ambition, but I dislike that word, as it carries to my mind a tinge of pure selfishness. The man who permits his mind to dwell on what he may become in any line of work does it largely for his own glory; but he who lives day by day and year by year with the sole end in view of doing his whole duty and making the fullest use of his powers, to the end that he may accomplish something for the world, is the man worthy to be placed alongside of the great in his generation.

Such a man was, in my estimation, James E. Garretson.

He was original in thought and conception. His mind grasped the idea that the surgery of the mouth should be separated from that of the body. He saw in the vista of future years a place here for the coming dental practitioner, and in this special work he foresaw possibilities hidden from the many. While sensitive to criticism he had the courage of the pioneer and never swerved from this position during life, that oral surgery was to be made a distinct specialty and worthy of the best efforts of any man.

It is not given to me to follow him in this great work, but is alluded to here to show the persistent devotion to an idea, if that idea promised to accomplish something for the world's advancement.

He was original in that it seemed impossible for him to walk in the footsteps of other men. He made his own path, and yet in the sense of originality, as an investigator of scientific problems, he laid himself open to criticism. This criticism was, I think, unjust. While he did not seem to care for the processes usually adopted among workers in scientific problems, he yet had his own methods, which were to him satisfactory.

His work in the profession of dentistry can hardly be over estimated. It is not to be found in the skill of the operator or in the jewelry of the mechanic, but in that courage that made him a leader, one capable of carrying the profession, as he found it in the early fifties, to a broader conception of its duties. To him more than any other man in this country is dentistry indebted for its advance in the past half century. To some of us it has been given to note the progress made year by year, and whenever we looked toward James E. Garretson his standard was always pointing toward greater perfection. In my view the position he took, amidst much criticism, that dentists must take this higher labor, has done more than anything else to give encouragement to the faltering and rouse the apathetic into stronger and more fruitful work. To do this means courage of a high order.

His mind worked not as the majority of men. While it loved to dwell on the past and to be in daily sympathy with the philosophers of the ages, it never forgot the needs of the present. His thought seemed to be that the good in all the past was worthy of being not only translated into modern thought, but that it should be made an active factor in daily life. To this end he sought to infuse into those with whom he came in contact a love for the deeper thought in that they might also become thinkers and worthy successors of those who have moulded the ideas of the world.

Men of ordinary caliber could not understand this character. The world has never been able to understand men ahead of their age, and James E. Garretson was a herald of the new time yet to come, and when it shall have arrived he will have his place, and it will not be among the least of those born to be honored.

He never seemed satisfied unless he was imparting the truths as he conceived them to those he regarded as needing illumination. Without money or price he simply asked men to hear his message. Hence, while busy in practice and full of the routine work of lectures, he stepped aside to give courses on philosophical subjects to all who would come. To these I owe the first clear conception of Dr. Garretson's inner life.

From that first course of philosophy I grew to know and appreciate him better, and as time went on a unity of sentiment brought us frequently in closer contact, and it was then I came to know him as the man.

His faith in the possibilities inherent in men seemed unlimited. To his conception man was truly immortal, and this being so, there was no place for frivolity, but an ever abiding and serious conception of the infinite that must develop the man into the graces of the gods. Death to him was the natural door to higher things and had only this meaning.

Who that heard his lectures can fail to remember the search for the soul, as he gave it, in the human organism and with what convincing force he demonstrated that *the* man had no eternal abiding place in the body, and with what a feeling of indifference he would take the powdered bone and scatter it as one would scatter to the four winds the ashes of a garment.

Men whose minds were not framed like his wondered why Dr. Garretson could spend his time thus, but so have they always reviled the prophets. That the life he lived amidst philosophical thought colored his mode of expression must be admitted, and many could not understand him, but to others it added, in all his public utterances, a freshness of metaphor and cogency of expression peculiarly refreshing in these days of platitudes and humdrum thought. As the auditors followed that glowing tribute to Wells at the memorial celebration of the discovery of anæsthesia, his last public utterance, who could but feel that it was a master-mind that gave power to the expressed thought? It was the outpouring of a soul enthused with a discovery that stilled the agonies of the world. It was not to him so much that Horace Wells did this, but that the cries from the surgeon's table were silenced forever. Wells died that the people might be free from pain, and the altruistic mind of Garretson gloried in this. How beautifully his nature is shown in this quotation from that address: "Consider, in contrast, a picture familiar before the day of Wells's insipration! A mother, her heart welling out in tears, limbs trembling so as scarcely to afford her support, helpless misery characterizing her countenance, despair striking at her with its thongs of flame, follows into a hospital operating amphitheatre a nurse who carries her first-born, which is being brought to the table. Alas! helpless, indeed, is that mother. How more than gladly, how a thousand times more than gladly would she lay down in place of the child! * * * The crucial moment has come; the child is placed and held by force upon the table. The mother is torn away. For a single moment eyes of mother and child have met in parting. A loud, frightened, despairing cry from the child rings from ceiling to floor of the room. The mother drops in a heap and is carried out a raving lunatic; she raves about and curses God as being without pity or mercy.

"Let a concluding picture, having relation with the first, help cover the intermediate one * * *

"A mother brings to a hospital a child whose deformity requires the knife for its correction. Conscious of the power of anæsthesia the surgeon talks with the parent while all the while the little patient pleased and inveigled by the sweet smell of chloroform is itself anæsthetizing itself. The cutting is done. The child has a dream of roses and gardens and wide fields. The mother has placed in her arms her restored offspring. She has no tears, no words; her contact has been alone with beneficence. She is overwhelmed by the mystery she has met and passed. She says 'Our Father which art in Heaven.' She says and feels there is a God of pity and mercy."

Is there more to be said of the motive force in our friend's life than is contained in this deep and vivid description of a past of agony to a future of peace?

His mind found rest by the gurgling brook as well as when amidst the jarring sounds of a discordant world. He was ever self-poised regarding philosophically the world as he had found it and that in each manifestation was to be learned something of man. He lived best with nature and his being seemed to harmonize perfectly with the quiet sounds of rural life. In illustration permit me to quote from his "Nineteenth Century Sense." 'Chaste and restful Swarthmore! Beautiful Swarthmore, seat of Quaker felicity! Surely saith the heart, 'Here hath peace taken up her abiding place.' The Rosicrucian saith, Here is Spiritus Sanctus!

'Spiritus Sanctus! found as well among swamps and brushlands of New Jersey; found in silent valleys lying between great mountains; found where tempestuous waves thud ceaselessly the sand and rock; found as one wanders reflectively along a railroad track; found as upon the lapstone is beaten the leather; found as a reader scans the proof of authors; found as the farmer sows seed or gathers the harvest; found as an old woman knits stockings or where decrepit men hobble on crutches; found amongst illumined cloud; found down in the blackness of coal mines,— being within and yet without, being without and yet within.'

His conception of men may be given in his own words. 'Height and depth have no other measure than comparison —this alike as to hills and men. Height as to men is not necessarily education, nor is depth absence of it. Distinction between wisdom and knowledge holds the measuring rod.'

We thus leave James E. Garretson, the man.

In our many deep conversations I learned to know him in his higher spiritual life and in those things that make for the fuller development of the race he was more informed than most men. His faith in the supreme advancement of mankind and an eventual growth to the God-like was a marked trait in his character. He knew, as few men can know, that life is eternal; that there are no bounds to progress; that the soul goes on forever. In his own language, 'The God leaves no man without evidences. There is no mountain so high nor valley so deep but what voice is heard as one crying in the wilderness.'

Thus our friend reached the goal, if not his ambition, at least the end of all the peoples of earth. A friend of all, he expected truth in friendship; honor among those with whom he associated. When that trust, that had followed him through life, was shaken; when faith was lost in those he had trusted, he fell as falls the reed broken by a strong wind. He could not comprehend men who for selfish ends would sacrifice all that is true and noble in life. The realization of this dark side of human nature came to him too late, the blow fell and our friend passed on to that home prepared for all mankind from the foundation of the Universe.

Where now is James E. Garretson, the ardent scientist, the genial philosopher, the devoted friend? Who may tell, but we know of him as we have learned to known the man, that he is not with the maddening crowd, not with the money-changers in the temples of Mammon; not amidst the frivolities of fashion; not even in the vaulted empyrean, but in your hearts and in my heart, in your memories and in my memory will he be found forever. A voice comes to me out of the silence, speaking in the language of the Master; listen to it! "Lo, I am with you always, even unto the end of the world!"

IN MEMORIAM—JAMES E. GARRETSON, M. D., D. D. S.

BY W. C. BARRETT, M. D., D. D. S.

The death of any man distinguished among his fellows because of his great attainments and high personal character, naturally causes a shock to the whole community. If he was learned, his passing away subtracts from the sum of human knowledge. If he was an investigator of the hidden processes of nature, we sigh to think of the great discoveries that even then he might have been upon the eve of unmasking. If he possessed great wisdom, a trained mind and keen perceptions, we are sorrowful that he should have been called away just when he was best fitted for the service of his fellow-man. If he had gathered stores of information which he was skilled in imparting to others, we feel a tender sympathy for those who are deprived the privilege of listening to his lessons of instruction. If with these he was a *good* man, our tears flow for ourselves and the whole world, that shall no longer have the ameliorating influence of his ennobling example.

These considerations move us to sadness and unavailing regret at this time, when we reflect upon the death of our Garretson. We mourn our loss, and that of the world. But at the same time we ourselves rejoice, and we congratulate that world, because Garretson has been. With us still lingers the rich perfume of his good deeds and his high attainments. Dying at the height of his fame and the summit of his great powers, we grieve that he should not longer have been spared to continue his work, but we exult that his career has been fittingly rounded out by an appropriate close. There were no years of inactive senility, there was no closing period of sluggish torpidity, but he died as he had lived, in the vanguard of the army of those who are battling for the right, putting forth their utmost efforts in behalf of the unfortunate children of humanity who have been stricken down in the fight, wounded by disease and disaster. His record is secure. His past is complete. His rest is perfect. The last rude shock to the sensitive soul has been endured, the last pang at the sight of suffering unalleviated has been received, and Garretson no more stretches forth his hand to minister to the woes of others, nor himself shrinks from contact with the rude and unsympathetic.

It is eminently fitting that we, who knew and personally loved him, should at this time assemble to do honor to his memory. It is equally meet that those who never saw his face should bare their heads in reverence at the mention of his name, for through all his professional career he had loved and reflected honor upon us. When, in the early days of its organized existence, dentistry was suffering from the limited knowledge and the scant erudition of too many of its exemplars, the refined tastes, the scholarly acquirements, the dignified bearing, and the gentle nature that benignantly shone through every feature of Garretson, gave a higher tone to our calling, and sensibly elevated us in public estimation. His sweet and elevating presence was a benison under which we lifted our heads in pride that we were his coadjutors. His professional fame and accomplishments, gradually extending from the limited field of his first work until they included the world in their concentric sweep, carried also the renown of the calling which he so nobly exemplified, and made dentistry an equal partner in his own greatness.

All the earth was acquainted with Garretson, but there were few who really knew him as he was. His was a character of many sides. Like the well-cut diamond, from whichever aspect he was viewed he presented a clear and open facet that reflected the purity and lucidity of his own nature. He had the rare gifts and the evenly balanced mental equipments that enabled him to shine in fields the most diverse. He possessed traits seemingly almost irreconcilable, but each equally admirable. As the surgeon, he was bold, prompt, determined, apparently merciless in searching out and extirpating the foundations of disease. As the ministering physician he was tender, compassionate, sympathetic, shrinking from even the appearance of suffering. As a writer upon professional subjects he was clear, concise, concrete, didactic. In his metaphysical essays he was abstract, discursive, speculative, and sometimes mystical and abstruse. As a public speaker and lecturer he was fearless, perspicuous, ready for attack and defense, at times almost pugnacious for what he believed to be right and true. In private association he was deferential, modest, gentle, retiring, lovable. He was a composite, with the head of a Gladiator and the heart of a woman; the arm of a Hercules, with the hand of a Hebe; the outward bearing of a stoic and the inward susceptibilities of a sybarite. How must he have schooled and repressed his emotions in the early days of his professional work, before his hand was trained unshrinkingly to pursue its merciless yet merciful course, undisturbed by the quivering sensibilities that responded to every nerve-throb of the patient beneath his keen scalpel.

There is little wonder that such a man should have been loved, or that his memory should be revered. There can be nothing strange or incongruous in this meeting of those who most clearly could recognize his worth. There is no extravagance or hyperbole when I, in my feeble manner but strong appreciation, attempt to pronounce a panegyric upon his character. This memorial meeting will but assure the continuation of his good work. It is but the dedication of his manes to the high task to which his life was devoted, when his example is held up to the young as one which they will do well to emulate; when his career and his character are adopted as prototypes for the instruction and illumination of the students who are about to enter upon the path that, with so much of honor and dignity, he followed to the end.

Viewed from this standpoint, Garretson is not dead to us. Though sleeping, he yet speaks. Though he has passed within the curtain which in life he so long, so earnestly, and yet so vainly sought to raise for a little glimpse of that which was beyond, though today, "Two Thousand Years After," he has finally solved the problem of "The Eternal Now," and rests with Plato, and Socrates, and Protagoras, with whom he so often reasoned in spirit while yet he was mortal, yet by his writings, his works, the inspiration that he has breathed into a thousand hearts, and most of all by the example that shall live while yet memory haunts those who exist, Garretson still teaches, and shall continue to teach. The words of wisdom that on earth he spoke are garnered in ten thousand souls, and shall be perpetuated and shine in many lives that are yet to be. His bodily presence no longer cheers us, but his spirit shall long inspire us.

Garretson's life was devoted to the alleviation of human suffering. For what more honorable avocation can man wish? It was his high privilege to wipe from the eye of suffering the tear of anguish. He could bring to the despairing comfort. He could span the black empyrean of despondency with the rainbow arch of hope. His dread knife was but the messenger of glad tidings to those who dwelt beyond the confines of happy expectancy. Oh, Blessed Surgery, linked with the dumb forgetfulness of her ministering angel of Anæsthesia; whose keen blade can rid the living of the loathsome weight of the dead; can say to dread disease and gathering gloom, thus far shalt thou go and no farther; can snatch from the very jaws of ravenous death its seemingly helpless prey, and restore to the embrace of deathless love the desire of its eyes. Thrice happy the man, to whom in full appreciation of his glorious privilege of skill and knowledge, with heart overflowing with benevolent kindness and sympathy, it is given to minister to the afflicted and to bring joy to those who know only sorrow.

Such was the lot of Garretson. In the full realization of all that the term implies, he rejoiced to call himself a surgeon. He practiced his art, not primarily for self aggrandizement or sordid gain, but like Him who went about doing good, that he might comfort the afflicted and bind up the broken heart. Now he rests from his labors, but his many works do follow him. There is yet pain and anguish in the world, but his hand shall no longer soothe them away. There is disease, but his skill shall no longer minister to its necessities. There are tears to be wiped away, but his gentle, sympathetic hand is no longer lifted to the grateful task. It is for us who remain to take up the work that he has left incomplete. It is for us to be inspired by his example. To us remains the task more fully, more devotedly, more unselfishly to dedicate ourselves to that work which Garretson so well performed; to become possessed of a share of his spirit and his aspirations, in the hope that in the end, when like him we too for the last time shall lay down the implements too often by the unthinking and the careless mistaken for those of cruelty, but which in the hands of skilled sympathy become the agents of a compassionate mercy, that we with him may also share in the plaudit; Well Done, thou good and faithful servant; enter thou also, with him, into the joy of the completion of a life well spent, of happy years devoted to that happiest of tasks, the service of the suffering, and with him at last fall into a blissful euthanasia.

"LE 'ENVOY."

When a man who is no longer young in years attempts to pay the last tribute of respect over the ashes of one whom he has ever revered as a senior, a master, a leader, the whole professional past presents itself in panoramic view. The vista of the years that have been is lengthened until it reaches back to the first professional aspiration which animated his heart. To me there is little of dentistry which is not in some way linked with the name and fame of Garretson. He was already prominent when first, on a much humbler plane, I essayed the same career. He was one of my earliest teachers, and to memory's ken Garretson was coeval with the first dawn of his profession.

It is in its personal aspects that the death of our dear friend seems the most bitter. The thought that never again can I listen to that revered voice, never again meet the glance of that eye, that from now until the time when I too shall gather up my feet in death no words of advice or instruction will issue from those poor dumb lips, causes a feeling of personal loss that makes it seem as though a pall were spread over a dead world. This, this is the bitterness of death. It is here that the grave finds its sting. From my heart, as from each of yours, goes out the earnest yearning, the indescribable longing for that which can never again be. I know that the morrow's sun will shine; that men will pursue their accustomed vocations; that there shall still be births and deaths, marrying and giving in marriage; but he to whose silent tomb our hearts are tonight turning, shall have no part in these human events, shall no more raise his voice in protest or in praise.

And the stately ships go on,
To their haven under the hill;
But, oh! for the touch of a vanished hand
And the sound of a voice that is still.

JAMES E. GARRETSON AS A MAN OF LETTERS.

BY WILBUR F. LITCH, M.D., D.D.S.

As has been justly remarked by Professor Barrett in the admirable eulogy to which we have just listened, Dr. Garretson was a many-sided man, and won distinction, not only as a practitioner of surgery,— eminent, indeed easily chief in his specialty,— but as a teacher of world-wide reputation, for Professor Flagg's statement is no hyperbole: "His pupils are found in every land and every clime." As a man of letters, also, he won a recognized place. His contributions to the literature of his own special field of surgical practice were of a high order of merit, and "Garretson's Oral Surgery" will long remain as a monument to his technical knowledge, his industry and his painstaking research.

Only those who have actually engaged in that, or similar fields of labor, can realize how exacting are the requirements for its successful prosecution. To write instructively upon technical subjects, the writer must bring to the task not only large practical experience and thorough technical training, but training also as an educator. All this implies a life, every hour of which has its allotted task. The man who makes of literature a profession has, or may have, his appointed hours of work and of rest; but the man who is both a busy practitioner and a teacher must, if he writes at all, either crowd that work into hours already full, or devote to toil the time he should give to repose. Usually, literary production under such conditions becomes possible only at the sacrifice of what should have been hours of rest and recreation.

But like many other workers, Dr. Garretson's idea of rest was not repose, not inertia, but simply change in the form of activity, and his best joy he found in the exploration of those vast fields of philosophic research in which he loved to wander, not only gleaning with eager hand the flowers and fruitage of seeds planted in by-gone ages, but himself scattering seeds of thought to make more bounteous and beautiful the harvest for coming time.

Surely, this was a toil worthy of the man, an aspiration which well reveals his nature, and we can well understand how, as a thinker and writer upon the great problems of human existence, the author of "Odd Hours of a Physician," "Thinkers and Thinking," "Lysias, the Ease Seeker," "Two Thousand Years After," "Brushland," "Hours with John Darby" and "Nineteenth Century Sense" has won a place in many hearts.

The impulsion to the vast labor involved in these voluminous writings upon philosophic themes, even the most censorious must acquit of all taint of sordidness, for literature of that order does not commend itself to popular perusal, but rather to the appreciation of the chosen few; so that the incentive to the production of works of that character must be quite other than mercenary. Indeed, it can hardly be doubted that not only to him, but to any medical man, such departures from the beaten track of professional routine represent not a monetary gain, but a substantial loss in diminished professional repute. The great public looks somewhat askance upon such divagations.

Even Dr. Oliver Wendell Holmes did not escape that mute reproof, and admirable as he was as a teacher of anatomy and physiology, and sound and well grounded as he was as a general practitioner, the world could not, or would not, believe that he could be at once a brilliant poet and a great physician.

Had his leisure hours been given to successful stock-speculation, or to the manipulation of judicious deals in real estate, or to attendance upon social functions well exploited by the complaisant reporter, all such departures from routine the world would have received as but evidence of a deeper sagacity and a more trustworthy strength of character; but to write poetry, which rarely, or philosophy, which never, "pays" is not "business," and what is not "business" the age has but little use for.

Dr. Garretson had deeper views of life. That was a fine saying of his "What avails a full stomach if the heart be empty." His heart was full, full of sympathy for humanity and for all truth and all righteousness, and out of the fullness of his heart his mouth spoke. To that heartfulness his friends, his pupils, his disciples responded; it was a vibrant energy which struck a responsive chord in many hearts, and the music of that chord was love.

The time God allots to each has been compared to a precious tissue which we embroider as we best know how. Dr. Garretson wrought his best; the Master asks no more. He rests from his labors. What place as a man of letters awaits him in coming time no man can foresee; but the truths he uttered can never die, for all truth is a part of the heritage of our race, and can perish only with it.

From amid all the froth and foam of human speech, there arises ever and anon a perfect sphere, a bubble, tenuous, iridescent, illusive, if you will, but for an instant reflecting to the seeing eye all hues and forms of earth and sky; the infinities imaged in the thing most finite; the world of hoar time in the world of a moment.

Thus is it with every divinely spoken word. The breath that creates destroys it, but fashioned by a power we know not of, and vibrant with a music which ear hath not fully heard, and radiant with a light which eye hath not fully seen, it speeds its appointed way and time. The bubble vanishes, but something of its message stays fixed on the sentient scroll of the human soul.

JAMES E. GARRETSON AS A SURGEON.

BY TRUMAN W. BROPHY, M. D., D. D. S., LL. D.

It is with feelings akin to those of a younger brother that I present this humble though heartfelt tribute to the memory of our fallen comrade, the noble man, under the shadow of whose name we are gathered here to-night.

Prof. Garretson made a most favorable and profound impression upon me, when, as a student, I first saw him in 1871, at his regular Wednesday surgical clinic in the amphitheater of the Medical Department of the University of Pennsylvania.

Tall, graceful in his movements, kind to a degree of tenderness towards his patients, overflowing with expressions of sympathy for all who were suffering, never commenting on the case in such a way as to cause his patients anxiety; on the other hand, always allaying fear, yet firm. His acute vision and well-trained mind were always employed to the best interests of all classes, poor and rich alike, who sought his professional services.

As he stood before the large class of medical and dental students in the lecture room, he impressed me as an ideal teacher. As a diagnostician he seemed to me a marvel in point of accuracy. He always advocated diagnosis by exclusion; tracing the departure of the tissues from a normal standard, on through the changes which lead to an abnormal state requiring surgical treatment, and then in language marked with delightful modulation, filled with earnestness, and expressive of a sense of his great responsibility to his patient, his student, and his profession, he would plainly point out and most graphically describe the true nature of the disease at hand.

As an operator, Prof. Garretson had not a superior. He was celebrated as an author. He was esteemed most highly as a friend. He was honored as a practitioner in oral surgery, and as a teacher he was appreciated and loved. "He adorned whatever subject he either spoke or wrote upon by the most splendid eloquence." Possessing a thorough knowledge of anatomy, his training was such that he won distinction in general surgery.

Many times I have seen the celebrated Prof. D. Hayes Agnew request him to conduct his clinic for him, and many times have I seen the gifted Garretson before the great medical classes of the University of Pennsylvania, describe with oratorical splendor and perform with consummate skill the most intricate operations known to surgery.

But Prof. Garretson's greatest achievement, that with which his name will forever remain inseparable, and for which his fellow-practitioners and the public will most cherish his memory, was his discovery of the uncultivated field of oral surgery.

In conversation with him, he said to me: "Why, Dr. Brophy, surgery of the mouth, jaws, and associate parts, is the most important, the most difficult to master, and requires, therefore, a greater degree of skill to practice with highest success, than any other branch of surgery."

Prof. Garretson always had in mind the best interests of his students. In the preface of his work, published in 1890, he uses these words: "Oral surgery, twenty years ago, was without so much as a name. Today, Oral surgery, as a specialty in medicine, is not surpassed as to its range and as to its requirements looked for on the parts of its practitioners, by any department of the healing art. It has become what it is by reason of the need of its existence."

No one but those whose daily intimacy with Prof. Garretson made it possible, knew the trials through which he passed in bringing teachers in medicine to realize that diseases of the oral cavity and associated parts, including the complications arising from diseased teeth, were not fully and properly taught in medical colleges.

It is difficult indeed to comprehend the extent of the obstacles in his path as he persistently, nobly, and successfully struggled to place oral surgery upon a high plane with the other departments of the healing art. Because of this he will ever be known as the "Father of Oral Surgery."

If I may be allowed to speak of my personal relations with him, I would say that his kindly bearing towards me, and his words of encouragement whenever we met, were indeed an inspiration, and whatever success I may have attained in the field of oral surgery, has been largely due to his instruction, and keeping close to his methods.

The noble Garretson will no more grace our meetings with his affable magnificent presence. No more shall we hear his pleasing voice, nor be aroused to put forth better efforts by his enthusiastic utterances.

His genial eye, ever with kindness beaming, shall no more greet ours, nor shall we again experience with him the warm hand-grasp of good fellowship.

His sphere of usefulness was so broad that his career remains a monument of human energy; his thoughts and acts survive, and leave an indelible stamp upon his race.

"Thus the spirit of his life is prolonged and perpetuated, molding the thought and will, and thereby contributing to form the character of future generations."

"No man liveth unto himself; we are members of one another." So our distinguished brother lives; he lives in our hearts, lives cherished in our memories, lives in his writings, he lives in his works, and will live among the generations yet to be.

JAMES E. GARRETSON AS A TEACHER.

BY S. H. GUILFORD, D. D. S., PH. D.

The evening is far spent and I must not detain you, but I cannot refrain from paying a brief tribute to the memory of the founder of this society.

Among the many varied gifts possessed by our deceased friend and brother, Prof. Garretson, there was perhaps none in which he so preeminently excelled as in that of an instructor. Self-taught in the sense that he was without the advantage of scholastic training in early life, he, nevertheless, by virtue of the possession of rare qualities of mind and close application, succeeded in attaining an enviable position in the world of letters, and a high standing in the ranks of educators.

In the development of his own mental faculties he came to know the difficulties that beset the seeker after knowledge, and learned how best to overcome them. His individual experience gave to him what the schools could not give,—an insight into human nature, and a consequent ability to lead and direct the young into the avenues that lead unerringly to the Pierian spring.

With him, as with many others of the world's successful educators, the ability to teach was not so much an acquirement as a natural endowment. With a mind filled with stores of knowledge gained by extensive reading and study, and with mental faculties trained to apprehend truth by logical reasoning, it was for him an easy and a natural thing to teach.

Those chief qualities of a successful teacher—mastery of one's subject, ability to impart instruction, earnestness, sympathy, and tact—he possessed in a remarkable degree. His methods were natural and perhaps peculiar, but his simplicity and directness, his mastery of the art of expression, his aptness of illustration and his intense earnestness, never failed to impress and convince those who sat under his teachings.

These qualifications, however great in themselves, were supplemented by a broad and generous sympathy, without which he would have lacked much of his power. He was the student's friend, and while his affection went out to them theirs returned to him, forming a bond that united them in a common interest.

No empty benches ever stared at him, either in the class-room or at the lectures before his own beloved society, for his words were words of wisdom, and he spoke from the fulness of his heart.

He felt that he had a mission to fulfill, and he strove to fulfill it with all the earnestness and conscientiousness that man is capable of. He filled himself to overflowing with his theme, and was thus prepared to awaken the enthusiasm and reach the hearts and minds of his hearers.

His style was simple and direct, so that he was readily understood by those of lesser and of larger ability, while his mastery of the principles of both inductive and deductive reasoning enabled him to establish and confirm the truths sought after in a way to be apprehended by all. He was not accustomed to present his statements in a dogmatic way, expecting them to be received because of his authority, but with everything he gave a reason, so that the pupils might not only know the fact but also understand how it came to be such.

His mind was broad and comprehensive. He understood that the mere statement of unrelated truths was not teaching, and with such method he had little patience. He believed that the true science of teaching consisted in the indoctrination of general principles, and that with these firmly fixed, each mind could reason out the particulars in its own way and to its own best advantage. This was the foundation stone of his method, and on it he builded wisely and well, as all of his pupils will testify.

Himself a student always, he was able to meet students upon their own plane, appreciating their difficulties, sharing their discouragements and pitying their weaknesses; but with it all, by his wonderful enthusiasm inciting them to still greater labor and firing them with ambition to excel in their chosen vocation.

As a teacher we may find his equal, but we will never find his superior, and he will live enshrined in the hearts of his pupils who worshiped him while he lived, and who will revere his memory to the end of their days.

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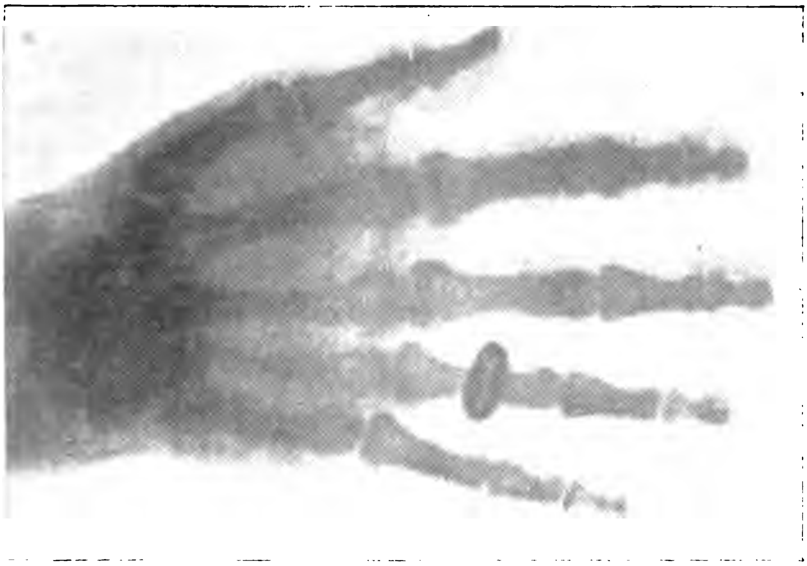
THE INVISIBLE LIGHT RAYS.

The world is making great progress in science. Years since people were congratulating themselves that they lived in this generation—that they had beheld the inception of railroads, express companies, steamships, the telegraph, and photography. Now these same elderly people see added to the list of scientific achievements the telephone, the phonograph, and electricity as an illuminant, a motor for all kinds of machinery, and a general servant. A few years since it seemed as if there was little left to invent. Now it would appear that we are but at the beginning of an inventive era that shall change all our relations with matter. Our environments are shifting like the scenes upon the stage, and old fogies find it impossible thoroughly to adapt themselves to their new surroundings. We live in another world from that of half a century ago. Old things have passed away, and all is become new.

This age begins to realize the breadth of the conceptions of Lavoisier, Rumford, Helmholtz, Faraday, and others. We can see the grandeur of the first apprehension of the idea that matter is indestructible, and of its accompanying fact that it is mutative, undergoing constant change, as also of the natural corollary that these molecular changes are but the exhibitions of the parent force that is as indestructible as is matter itself, and that all force is but a mode of motion. We have a key for the solution of the problem of the ages. Heat, light, chemical affinities, electricity, even vitality, nervous force itself, are but so many varied exhibitions of the great unit force—but mere modes of motion, each resolvable into the other.

It seemingly remains but to determine the laws that govern these molecular and other motions, in order to discover the relations and the conditions under which heat may be transformed into light, and that into electricity, or vice versa, and when this is completely accomplished science will present nature chained and reduced to complete servitude. We have made some progress, but each new discovery only shows how great is the unknown. We have learned that all these modes of molecular motion consist of undulations, or wave-beats; that as sound is made up of vibrations, the pitch and intensity depending upon their rapidity, so light consists of the same ethereal oscillations, and that color, like pitch in sound, is but an indication of their rapidity.

All this is apropos to the latest born of science, the production of photographs by the so-called Roentgen process—the making visible that which was invisible. It is an indication of the spirit of inquiry that possesses the world, of the scientific instincts of mankind, that this new discovery has taken possession of all classes of intelligence, and has become the craze that the discoveries of Pasteur, and Koch, and others assumed. Not only are professional and scientific journals full of the new process, but it has invaded the daily press, and the newspaper reporter is as gravely discussing ultra-violet rays as is the staid professor, but not always with the same degree of intelligence.



FROM "THE ILLUSTRATED BUFFALO EXPRESS," COPYRIGHTED 1896.

At first thought it seems absurd that under any circumstances glass and aluminum can change conditions as to transparency, the former becoming absolutely opaque to rays of light that the latter transmits with greatest readiness. But when the matter is examined from the standpoint of the correllation of forces, the idea becomes tangible and loses its improbability.

The laws which govern the vibrations called sound, are little known. Even music, which is the study of certain relative oscillatory movements, is known but empirically. We are aware that in certain resonant bodies, allowed to vibrate freely, there is a definite relation between these movements, and that a specific number of these vibrations produces a sound that harmoniously blends with that of another definite number of vibrations, while those between the two are disagreeably dissonant. We can produce those vibrations at will, but we cannot say what their relation is, why it is pleasing, or the reverse. We only know that it is so.

We know also that the power of the human ear to detect sound vibrations is limited, and that the line that marks the boundary of the preception of one is not necessarily that of another. We are aware that certain animals can detect and plainly hear sounds that to us are inaudible; that is, they can recognize distinct vibrations that may be either too great or too few in number for our perception.

The human ear can detect the chirp of the cricket, or the squeak of the bat, while the sounds produced by some other animals may be beyond its range, though easily within the powers of their fellows. It may be that insects are thus enabled to make sounds recognizable to their own species, while utterly dumb to us. There may be a language in nature that does not exist to our dull apprehension. The sound of the falling waters at Niagara gives a distinct musical tone to a few persons, and the ocean in a tempest, as it beats upon the shore, may be as musical as an organ.

The number of vibrations in a resonant body, or of vibrations made resonant, determines the pitch of the tone produced by them, the greater the number of wave-beats the higher being the pitch. Helmholtz fixed the lower limit of the perception of tones at 16 vibrations per second; that is, if there are less than this they become separate sounds, and are not linked together into a tone. The highest limit he places at 38,000 vibrations per second. That is, if there are more than this number, the ear of the average man refuses to detect them, and sound ceases. Yet it is undoubted that some animals can detect a yet higher number, so that there are ultra tones beyond those recognizable by us, or those beyond 38,000 per second.

Light also is another manifestation of force as a mode of motion. Visible rays consist of a definite number of etheric vibrations, and as tone is the unit of measurement in sound, so color is the unit in determining light. There are in the solar spectrum, or the analysis of a ray of solar light, seven primary colors. Of these, red, at one end of the spectrum, represents the least number of visible undulations, and they have been fixed by Dr. Young at 477,000,000 per second. Violet is the result of the highest number that the eye can detect, and this the same authority fixes at 699,000,000. Tyndall gives the vibrations for violet at 789,000,-

000, but whatever the exact number may be, beyond the violet the eye becomes useless as an organ of vision, for the retina cannot recognize the sensation of light. It is not that a higher number of undulations may not exist, but that the human eye is too imperfect to take cognizance of them.

To the united rays of the spectrum, which produce white light, glass is permeable, while metals are not. So we have been measuring this permeability, which we call transparency, by a very limited and imperfect criterion, and we call a substance that will not permit the passage of the rays which our defective vision alone recognizes, an opaque object. Yet it is quite possible that certain insects, with a much higher range of vision, may be able to detect a dozen colors instead of but seven. That is, undulations beyond the 700,000,000 or so that produce violet to our vision, may be detected by them, and may give added colors. These supposed ultra-violet rays are the ones that may be responsible for the photographs produced by the so-called Roentgen process.

The differentiation of bodies to such rays as these may then be a simple matter. If chemicals can make a paper sensitive to these ultra-violet, or sub-red rays, and if they are capable of penetrating some substances while some are impenetrable to them, and that without reference to the other rays of the sun, it will be relatively as easy by means of specially prepared paper and a proper source or method of illumination to photograph a diamond that is locked up in an iron safe, as to obtain an image of a bar of iron imbedded in crystal by means of the recognizable rays of the solar spectrum.

If this be so, it opens up a wonderful field for the investigation of science. For purposes of comparison we present with this article a photograph made by these supposed ultra-violet rays. It is that of a human hand, one of the fingers being encircled by a gold ring. To these rays the soft tissues of the hand are translucent, and they transmit them. The bones are less permeable, and give a much denser shadow, while the gold ring is absolutely opaque, and shown as a black body. Pictures like this are now common enough, and perhaps all the readers of this article will have seen them, but we reproduce this for illustrative purposes. We have but to imagine the process so perfected as to indicate degenerations or changes in the bone by deeper shadows, or by more translucent patches, and it will be readily conceived how useful such an apparatus would be in the study of pathology; or if it was possible to distinguish by its aid the different tissues, and thus locate an aberrant artery or organ, it would become indispensable in surgery. The possibilities of the discovery are beyond comprehension, and when we reflect that it is but in its earliest infancy, only just born, an infinitude of conjecture concerning its application opens before us that is appalling in its immensity.

NAL EDUCATIONAL BOARDS.

made last year, that the National Board of Dental given authority to investigate the conditions of to their equipments and methods of teaching, and of supervisory censorship over them. This would a wise move at the present time, because of a number

ce, it would tend to bring on a greater spirit of antween the colleges and the Board, and there is far too much The Examining Board has an important and a delicate its good influence for the future depends upon its harmony with the schools. The latter are naturally someof their own prerogatives, and individual boards have in es shown a seeming disposition to extend their powers to the this might have brought on collisions with the schools, had for the counsels of prudent men. More than once the Board of Examiners and the National Association of Dental have seemed on the eve of a rupture. The Board of Examiners proceed with caution, until experience has fully defined their and custom has brought them into harmonious relations with profession in all of the states. Precipitancy in hastening even reforms, might ruin all. *Festine Lente* is an excellent motto for organizations established to bring about desired corrections.

The best method of appointing State Examiners has not yet, in all of the states, been adopted, and until the association is unified and made entirely homogeneous, it should not attempt measures that are too radical. In some of the states the appointments are made by the Governor, and political considerations are of the first consequence. We have a knowledge of one such instance. A prominent member of the profession had been active in obtaining the passage of a dental law, establishing a State Board, had given much time and spent a great deal of his own money, and finally had succeeded where others had failed. The Governor, who was a political friend, offered the doctor a place upon the Board, which he declined. He was then invited to nominate persons who would be the proper ones for the position, and using a great deal of care he sent to the Governor a list of representative men who would have the entire confidence of the profession. Within a few days he received a telegram asking his attendance at the Capitol. On presenting himself before the Governor, he was told with an air of betrayed confidence, that complaints had been made that some of the men whose names were sent in did not belong to the same political party with the Governor, and an explanation was demanded, and an assurance that each of the parties named was politically orthodox.

The doctor informed the Governor that he had not thought to inquire concerning the party affiliations of any of the nominees. He did not know what were their politics, but he did know that they were competent men, who had the confidence of their associates, and who would be acceptable to all dentists. "O, well," the Governor said, "that won't do, you know. I will take the matter into consideration." And he did so, with the effect that excellent politicians were appointed, some of whom were unknown in dentistry, while others were known only for their brazen disregard of all professional and ethical obligations. It will take some time for even a good examining board to secure the confidence of the dentists of that State.

Some of the members of some examining boards are not familiar with college work. They, perhaps, hold honorary degrees, and never themselves having passed through a college curriculum, should not be the final arbiters of matters with which they can have no familiarity. They may be the very best judges of what should be the qualifications of an experienced dentist, for their own requirements, frequently of an eminent character, were obtained in the school of experience; but that is something which colleges do not pretend to give. They teach the theory and technique, but experience must, as in medicine, be gained by individual practice. Too often the men who were taught by the hard discipline of practical work, are disposed to examine in their own curriculum, and to demand a practical knowledge that can only be gained by post-graduate work; they require that the neophyte shall know how to swim before he is allowed to approach the water. A few years' observation of the working of special methods, and of earnest inquiry to find the best way, will be better than to seize upon ground that might subsequently be found untenable.

Again, the National Association of Dental Faculties has indicated its determination carefully to discriminate between the good and the bad schools. It has appointed committees to visit the schools, and to report upon their equipments and methods. Until that body indicates a disposition to be lax in its correction of delinquents, it will be well to leave the matter with them, for schools will submit to the discipline of their own organization, when they would be restive under that of a body which they might be led to believe inimical to them, and if coercion should be of a nature too drastic, some of them might break through all restraints, perhaps carry their State Legislatures with them, and utterly demoralize the whole educational interests, completely undoing all the good work accomplished by the Association of Dental Faculties during the past ten years.

In view of all these considerations, it would seem as if the true friends of educational reform would council moderation on the part of both

Examiners and Faculties, with the view first to establish relations of harmony and confidence between the two bodies. By united effort they can secure a perfect educational system in all parts of our very extensive country, and among peoples of widely divergent interests and educational facilities. Conflict between them—and we do not mean to intimate that such a thing is imminent or threatened—would mean anarchy, confusion, and the loss of all that which has now been secured.

RECENT OBSERVATIONS IN HISTOLOGY.

Mr. Charles S. Tomes, of London, has lately read before the Odontological Society of Great Britain, a paper entitled "Notes upon Enamel and Dentine," which will be likely to engage the attention of histologists. His observations were the results of a study of the papers of Dr. G. V. Black, published in the *Dental Cosmos*, during the past year, the most important of which were epitomized for this journal. He criticises some of Dr. Black's methods, but does not seem to have arrived at any widely different results. In fact, in the more important particulars, it would appear that he has rather corroborated Dr. Black, notwithstanding the startling conclusions of the latter.

Regarding the supposed difference in the amount of lime salts in teeth of poor and good structure, which difference Dr. Black asserts does not exist, Tomes says: "I found in one denture that the percentages of lime-salts in teeth of poor quality ranged somewhat lower than in those of good quality; still the difference is not great, being only about one per cent. Again, Dr. Black says that teeth on the opposite sides of the mouth differ; that is to say, the central incisor on one side of the mouth differs as to percentages of lime salts with the central on the other side. I tried this, and though I did find differences, they were so very small that any one knowing anything of quantitative analysis would not build any theory upon them. It is well established among chemists, that small differences in decimal points in analysis can only be relied upon when they constantly appear in a large number of experiments.

"There is another point which I have found quite constant, viz., a higher percentage of lime salts in the dentine of molars and bicuspids than in that of incisors and canines. That, you will see again, is not conducive to our believing that the amount of calcification determines as to whether there is to be caries or no caries."

There is one important point brought out by Mr. Tomes, that we think has been overlooked by many observers. He states it as follows: "If we get from a piece of dentine 72 per cent. of lime salts, chemists have been in the habit of setting down 28 per cent. as organic matter; but if you set about it the other way, you find you come very far short of that 28 per cent. Taking a human tooth, decalcifying it, washing it free from acid, and drying it, I find the organic residue that is left is, instead of 28, only 19 per cent., and the rest is mostly water, as you can very easily demonstrate * * * We have, then, in dentine, 9 per cent. of water, 72 of lime salts, and the remainder organic matter. * * * It seems quite possible that the difference between the bad and good teeth may have to do with the combined water of crystallization — it may be so, but on the other hand, it may have nothing to do with it."

This question, of the incorrectness of many observers in including inorganic water in the relative amount of organic matter, materially affects a number of correlative propositions. Mr. Tomes turned his attention to enamel, and carried on a series of experiments to ascertain what the nature of the organic matter in enamel is. He was exceedingly impressed to find that enamel is practically an inorganic tissue, the small proportion which has usually been set down as organic matter being mainly water. The amount of organic matter was too small for quantitative estimation. Then came the question: If enamel contains no organic matter, how does it come by its structure? He thinks it quite possible that the lime salts may be deposited in the interior of the enamel cells, their exceedingly delicate walls playing the same part as the connective tissue honeycomb of the shells of some of the molluscs, the comparative absence of organic matter being due to the exceeding tenuity of their walls, as well as to the absence of organic matter from the prisms themselves, which are purely crystalline.

In the discussion of the paper that followed its reading, Dr. J. Leon Williams, formerly of New York, said that he believed Mr. Tomes's analysis of dentine and enamel were the most careful and critical ever made. They opened up a very wide field for investigation, and it would certainly be necessary to modify very much the views that had been held with respect to the causes of the decay of teeth. They were in line with the conclusions and observation of Dr. Miller, who said that they should look for these causes very much more to the environment of the teeth than to their inherent structure. It might be regarded as a very heterodox statement, but, in his judgment, the worst formed teeth, as to inherent structure, in a perfectly healthy mouth would never decay, while in an unhealthy mouth the most perfectly formed teeth would never be able to resist decay.

It will be remembered that this was substantially the ground taken by Dr. Black—that is, that the condition of the teeth as regards decay depended upon their environment rather than upon their structure. That enamel is practically without organic matter seems hardly credible. We know that the line of demarcation between enamel and dentine is irregular, and that along its border there is living matter extending into the enamel, and while there may be less near the periphery, it does not seem reasonable that a part of the enamel being provided with it, the remainder should be practically destitute of it. An inorganic tissue is a contradiction of terms, for a tissue that is the product of function must be organized, and how can that be without organic matter?

The subject is a very interesting one, and for the credit of dentistry it should be definitely solved. All the scientific world is interested in it, and it behooves every man to bring to its solution any possible light and aid.

The paper of Mr. Tomes has not yet appeared in full, but it will be published in the next number of the Transactions of the British Odontological Society. We are indebted to *The Dental Record*, of London, for the excellent abstract and the discussion which has been used in this epitome.

AMALGAMS.

The history of this substance as a filling for teeth is a curious one. First introduced into this country by some notorious French empirics, in 1833, and extravagantly advertised by them, it had an enormous run, so much so as seriously to interfere with the practice of reputable American dentists, who raised such an outcry against it that it was tabooed in the best offices. The great mistake was made of proscribing it utterly, and its employment was made a matter of professional orthodoxy, by resolutions introduced in the American Society of Dental Surgeons, by Chapin A. Harris, in 1842, declaring its use to be malpractice. It was not until after 1850 that any attempts to test its availability were made.

Since that time observations and experiments have been made by many competent men, both in this country and in Europe, each of whom has found in it new qualities, either admirable or the reverse. A few years ago a series of experiments were conducted by men like Drs. Bogue, of New York, and Chandler, of Boston, upon the relative expansion and contraction of different amalgams, but nothing decisive was determined. Thomas Fletcher, F. C. S., of Warrington, England, whose metallurgical knowledge and experience surpasses that of most men, made exhaustive experiments and observations, and other Englishmen have followed in his footsteps.

The latest and most comprehensive series of experiments was lately made in this country by Dr. G. V. Black, but even his scientific knowledge has been insufficient to account for some of the vagaries presented by different alloys and amalgams. His methods are attacked by Mr. Fletcher, in an article written for this journal and published in this number. As the sole object of these examinations and discussions is to determine the truth, we took the liberty to forward to Dr. Black a proof of Mr. Fletcher's article, and give him an opportunity to make reply, which will also be found in connection with the article of Mr. Fletcher. All this had to be done without the knowledge of the latter gentleman, as he is too far away for consultation. We need not call the attention of the reader to these contributions to the literature of the subject. They will be read, and their contents considered by all. There is much yet to learn about amalgams, and every criticism and suggestion, especially from men of wide experience and profound knowledge, is valuable, and there are many such who should add their quota.

There seems to be a curious misapprehension as to the exact meaning of the terms alloy and amalgam, many using them interchangeably in their application to dentistry. An alloy is a mixture of two or more metals. If one of these is mercury, it is an amalgam. So an alloy of tin, silver and gold may be made, that is intended as the base for an amalgam when it is mixed with mercury. Amalgamation is the mixing of a metal or an alloy with mercury. The latter has the property of uniting with many metals and dissolving them into itself, the resulting compound forming an amalgam. In one sense an amalgam is an alloy, but the meaning of the latter term is usually restricted to mixtures other than those with mercury, amalgam being substituted when the latter metal is one of the ingredients in sufficient quantity to amalgamate.

LABORATORY SCRAPS.

Every dentist should know how to the best advantage to dispose of his scraps and filings of the precious metals. It is not very good economy to pay a dollar or more for gold or platinum, and then to sell the clippings and filings back to the same man of whom they were originally procured for thirty or forty cents. The necessary apparatus for refining and melting gold does not cost much, and every dentist should know the process. Old scrap that is not fit for rolling out into plate will make solder. Refuse foil may be melted, and it makes excellent fine plate for many purposes. Even old amalgam fillings may be melted down and filed up again, the mercury being all sublimated in the crucible.

Platinum scrap has heretofore been considered unavailable for working over. But with the electric current it may readily be reduced. Any one who has the Custer Electrical Continuous Gum Furnace, will find no difficulty in working up platinum refuse. We lately sent to Dr. Custer a considerable quantity of scraps of various grades. First there was a lot of trimmings of pure metal, obtained from platinum bases for continuous gum plates. This was returned in buttons of pure platinum, which were readily rolled out to any desired thickness. Then there were platinum filings and trimmings, containing a little pure gold used as a solder. There were platinum devices of various kinds, that had been used for retaining or other kindred purposes, and platinum scraps of many kinds that contained gold as a solder. This when melted was rolled out and used for the manufacture of crowns, and for almost any device, save the making of continuous gum plates. It is quite as good for most purposes as if it were pure platinum.

Finally, there was a lot of gold scraps containing platinum—old crowns and different appliances in which a small amount of platinum existed. These were rolled out into plate, and it makes excellent clasps, may be used for backings, and for the construction of devices that require great rigidity and strength, with but little material. Altogether, there were a goodly number of pennyweights of metal of the widest possible application in dentistry, and which, if sold, would have brought but a contemptible sum, but which now serve to fit out the laboratory with a choice selection of useful metals.

ARTIFICIAL DENTURES.

Clearness of enunciation in speech is very largely dependent upon the development of the alveolus, and this in turn depends upon the development of the teeth. No one with a narrow contracted arch, or with an undeveloped or over-developed alveolus, will have clear speech. When the teeth are lost, and the alveolus has been absorbed because it no longer has any function to subserve, all distinctness of articulation is lost. It then becomes the duty of the dentist to attempt the restoration, not only of the teeth, but of the alveolus also. And yet how many take this latter supplemental action into account? They use great care and exercise artistic skill in getting the artificial teeth into proper position, and perhaps carefully restore the contour of the facial muscles, but give scarce a thought to the lost lingual portions of the alveolus, upon which distinct speech depends.

The enunciation of most of the sounds of articulate speech must rely upon the ability properly to control the emission of air in the incisor region. This is accomplished by allowing the tip of the tongue just to make contact with the palatal arch immediately behind the incisor teeth. The delicacy of the adjustment of the tongue to this space makes the difference between clear and clumsy speech. If the teeth shall have been lost and the alveolus absorbed, in most cases the tongue will fall short of contact, and inability to pronounce certain sounds will be the result. If an artificial plate is now adjusted which shall exactly restore the alveolus that was lost, and the teeth be in their proper position, perfect speech is restored. If the plate immediately back of the incisors, just where the tongue comes in contact with the arch, be too thick, the speech will be the same. If not thick enough—the most common fault—there will be a constant hissing and sibillation in articulation. The tongue does not properly close the aperture. The clearness of enunciation where an artificial denture is worn depends, very largely at least, upon the adjustment of material just where the lingual alveolar ridge existed, immediately at the base of the upper incisor teeth.

BIBLIOGRAPHICAL.

THE PRINCIPLES AND PRACTICE OF DENTISTRY, including Anatomy, Physiology, Pathology, Therapeutics, Dental Surgery and Mechanism. By Chapin A. Harris, M. D., D. D. S. Thirteenth edition, revised and edited by Ferdinand J. S. Gorgas, A. M., M. D., D. D. S. With twelve hundred and fifty illustrations. Philadelphia: P. Blakiston, Son & Co., 1896.

The history of this book is an epitome of the history of modern American dentistry. The growth of our practice, the expansion of our field of research, is marked by the development of this, the first of our modern text-books. It has steadily kept pace with the advance of thought, and each edition is an index of the professional status of its period. The first edition, issued in Baltimore, in 1839, was simultaneous with the establishment of the first dental college, and the first dental journal. We are so fortunate as to have in our library a copy, and it is instructive to compare it with the edition now under notice. It was a thin, octavo volume of 380 large type pages, and was without illustrations, save three plates at the end, showing cuts of the artificial teeth of that period — metal plates, with spiral springs to hold in position full dentures. It contained no anatomy, and but thirteen pages devoted to operative dentistry, the rest being given up to art and mechanism, to dentition and the natural history of the teeth, and to the restricted pathology of that day.

The second edition was issued in 1844, by Lindsay & Blakiston, of Philadelphia, the predecessors of the present publishers. It contained a few illustrations, and was considerably increased in size. Successive editions were published in 1847, 1850, 1852, 1855, 1858, 1863 and 1866. Dr. Harris having died in 1860, Dr. Philip S. Austin, assisted by Dr. F. J. S. Gorgas and Dr. Thomas S. Latimer, carefully rewrote the work, and under their editorship the tenth edition of five thousand copies was issued in 1871. Since that time the several editions have been edited by Prof. Gorgas, and under his care it has grown to its present dimensions, nearly 1200 pages, with 1250 illustrations. It has kept its place as the leading text-book in, and a cyclopedia of, dental practice.

In this, the thirteenth edition, most that was obsolete has been eliminated, while chapters upon the latest processes have been added, bringing it up fully abreast of the advance of thought. Little need be said concerning its merits, beyond this one fact. It is too well known to need commendation at our hands, and it is too thoroughly established in the confidence of the dentists of the world to be either written up or down. Its eminent editor has gained too many laurels in our literature to need a fresh wreath, and it is sufficient to say that his work in this volume is worthy of him and his reputation. But a short time will elapse before the fourteenth edition will be demanded, and we can but hope that Prof. Gorgas will live to prepare that and many subsequent ones.

THE DISEASES OF CHILDREN'S TEETH: THEIR PREVENTION AND TREATMENT. A Manual for Medical Practitioners and Students. By R. Denison Pedley, M. R. C. S., L. D. S., F. R. C. S. Dental surgeon to the Evelina Hospital for Sick Children, Southwark, London. With numerous illustrations. London: J. P. Segg & Co. Philadelphia: The S. S. White Dental Mfg. Co.

That there is a lack of desirable information on the subject of the diseases of children's teeth on the part of the average medical practitioner, is undeniable. Whether or not the attempt to educate them in the technics of dental practice is likely to prove beneficial, is matter for argument. The operations necessary when dental interference is called for, are beyond the scope of the ability of medical men, and must, of necessity, be relegated to the dentist. A mere smattering of knowledge may possibly lead to greater evils than benefits, for it may induce the medical man unwisely to interfere with that which belongs entirely to the man who has properly prepared himself for such duties, and thus may make a bad matter worse. There is enough in the legitimate practice of medicine to absorb the abilities and attention of any man, without his endeavoring to cover distant specialties; hence, we doubt the propriety of giving physicians mere superficial instructions in tooth-filling.

The author, however, calls attention to the great number of diseases of childhood which are too often ascribed to dentition, but in which the digestive tract is at fault, and this is a matter which cannot too often or too emphatically be brought to the attention of the medical man.

The book is better adapted to the needs of dental students than perhaps any other class, and for them there is much that is of great value, but nothing that has not been often said before, and which will not in substance be found in some of the usual text-books. It is a summary of dental practice as confined to children, and as such, may prove very useful for students.

CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY FOR 1895. B. H. Catching, D. D. S., Editor and Publisher: Atlanta, Ga. Price $3.00.

The sixth volume of this excellent work presents some new and attractive features. A corps of foreign editors has been secured, and it now presents a digest of the periodical literature of the world. A new department has been added—that of dental science—and this should commend it to every one who endeavors to keep pace with the advance of our profession. Indeed, we sincerely hope that this will in future editions be made even more a prominent feature than it is in this volume. The time has passed when dentistry can be restricted to the applied sciences, for we are making steady progress in abstract and theoretical knowledge. An epitome of each year must comprise that which has been added in the collateral branches, and Catching's Compend has attempted that for 1895.

We have endeavored to call the favorable attention of dentists to the preceding volumes, and we can assure them that the present is even more worthy their study than any of its predecessors. It is the cream of the literature of the year, the condensation of the thought of the profession in all its varied fields. We hope that it may become even yet more than at present, an established part of our literature, year by year growing in comprehensiveness and importance, until it shall form an essential part in every dental library, and be as much a portion of the equipment of any dental office as the chair or the operating table. But this desirable object cannot be attained unless dentists generally encourge its editor by purchasing and reading it, for every copy sold aids in the perfecting of subsequent issues. Let dentists then send their subscriptions to the editor, and thus assist in accomplishing a purpose that will reflect credit upon dentistry.

TRANSACTIONS OF THE ILLINOIS STATE DENTAL SOCIETY FOR THE YEAR 1895. With an index for the years 1865–1895 inclusive. Chicago: *The Dental Review.* Publication Committee: Louis Ottofy, A. W. Harlan, E. Noyes.

This adds another to the series of volumes containing the reports of one of the best State societies in existence. No one ever attentively read any of these reports without being instructed in many important subjects. There are men of original views among the members, and they always present papers of merit, and valuable thoughts in the discussions that follow. The reports of many new methods and descriptions of many novel appliances will be found among them. This volume is worthy its predecessors, and reflects credit upon the Publication Committee.

ELECTRICITY IN ELECTRO-THERAPEUTICS. By Edwin J. Houston, Ph. D., and A. E. Kennelly, Sc. D. New York: The W. J. Johnston Co. 1896.

This book of nearly 400 pages gives in a condensed form a great deal of information concerning the character of different electrical currents, as wells as of the various forms of rheostats, milleameters, galvanometers, transformers, etc. Hence it will be found very useful for dentists. It may be obtained of the publishers as above.

CURRENT NEWS AND EXCERPTS.

WILLIAM H. DWINELLE, M. D., D. D. S.

There are few names better known in dentistry than that of Dr. Dwinelle, who died at the home of his earlier years, in Cazenovia, N. Y., February 13, 1896, in his seventy-seventh year. He was born in Cazenovia, and received his education in Cazenovia Seminary. When but nineteen years of age he commenced the practice of dentistry. There were then few opportunities for obtaining any knowledge of the profession, and the young student of dentistry was compelled to depend chiefly upon his own ingenuity and intuitive knowledge for the accomplishment of his purposes. But he was possessed of these traits to an extraordinary degree, and accordingly made great progress for those early days. Realizing the necessity for more general knowledge, he studied medicine and graduated in that profession.

In 1856, feeling that the sphere in which he then moved was too restricted, he removed to New York City, where he at once took a high position. His great ingenuity enabled him to devise many improvements, both in methods and implements. Being imbued with a true professional feeling, he refused to patent them, and lived to see the day when he was called upon to pay a royalty upon devices of which he was the original author, they having been stolen and patented by men not only without professional feeling, but without common honor or honesty.

It is difficult to estimate the great influence for good which the honorable career of Dr. Dwinelle had upon the young and growing profession of dentistry during his most active days. Not only was he an inventor and originator whose most useful devices were ever at the service of his professional brethren, but he was a sententious and instructive writer and essayist. In those early days there was but one dental journal, *The American Journal of Dental Science*, and whoever has a file of that pioneer in the field of dental literature, will meet with the name of W. H. Dwinelle as a contributor in almost every number. Indeed, he was at one time one of its editors.

He was always active in dental societies, and was one of the organizers of nearly all that then had an existence. He frequently read before them papers that always attracted the attention of dentists everywhere for their marked originality and the clearness with which he described his own devices and methods. He was always ethical, and sustained a reputation for professional integrity and uprightness that made a deep impression upon the younger men of the profession. He had for many years a large and very lucrative practice in New York, and few men have commanded the high fees that he received. In his later years, when he had outlived his generation, he had the satisfaction of looking upon a profession that he had seen grow to great proportions from the humblest beginnings, and of knowing that he himself had been one of the chief contributors to that wonderful advancement. He was the last of that coterie of men who labored together for the early advancement of dentistry, and in some respects he was the most noted of them all. His name will always be an honored one wherever dentistry is known.

AMALGAMS.

The proper preparation of any of the materials used in dentistry requires an amount of experience and technical study that is not comprehended by the tyro. Two persons may use the same formula for making gold solder, but their products will bear little physical resemblance. It is the same with amalgams. That this may be understood, the following formula, used by Dr. W. E. Halsey, of Brooklyn, in preparing a very good amalgam, is published. But unless the directions be intelligently and carefully followed, and the metals themselves are of standard purity, the product may never be twice alike:

Take of silver 63 parts, of tin 33 parts, and of gold four parts. Melt them in 100 pennyweight lots, as follows: Place a sand crucible in an open grate fire. When it is red and coated with borax, a few pennyweights of tin are dropped into it, which melt immediately. The other commingled metals are poured in immediately from small scoops, a little powdered borax is sprinkled over the top, and the crucible is covered. If the fire is what it should be, within four or five minutes the whole will be found in a molten condition, the crucible being heated but little above a cherry-red. The tin appears to reduce the melting point of the higher grade metals. The molten mass is stirred by a few quick turns of an iron rod heated to a cherry-red, and the mass is quickly poured into a shallow mould cut in soap-stone, which should be cold, that the alloy may be crystallized at once. The ingot is then filed up, and all particles of iron or steel removed by a magnet.

This alloy requires a proportionately large amount of mercury for its proper amalgamation, and as it sets very promptly it demands quick manipulation.

THE PROFESSION. OF LAW.

The first law school in the United States was established at Litchfield, Conn., in 1784. The oldest now in existence is that of Harvard, which was opened in 1817. The Yale Law School was established in 1824. Until the year 1860 there were but ten law schools in America. There are now 68, all but seven of which are connected with universities. In these schools there were enrolled in 1895 8,330 students, an increase of 1,325 over the preceding year, giving an average of 120 students to each. In 1870 the number of students in law schools was reported at about 1,600. But a comparatively few of the law students of New York enter the profession from the law colleges, the greater proportion being admitted directly from private offices, through an examination by a State Board of Examiners, acting under the authority of the Regents of the State, as in medicine and dentistry. Formerly they were admitted after an examination conducted by some lawyer designated by the Court to which the application was made. This was usually some one whose practice was not so large as to monopolize his time, and it was too often but a mere farce. Matriculation in a law school can only be secured in this State by fulfilling the same preliminary requirements as to education that are demanded for matriculation in a medical or dental college.

INORGANIC ELEMENTS.

Professor Bunge, of Basel, Switzerland, lately stated before the German Congress of Internal Medicine, that iron is best taken into the animal economy, and perhaps only so taken, when in its natural combination in the food, and that only organic compounds of iron are taken up and make hæmoglobin.

It would seem as if Professor Bunge was behind the times. For ten years the editor of this journal has taught and insisted that the giving of calcium compounds to pregnant women for the purpose of producing better teeth in their offspring was without effect, as no inorganic matter can be assimilated by animal organisms. The system must elaborate its own inorganic elements from organic sources. Only the vegetable can organize inorganic matter. The lime in the teeth and the iron in the blood must be obtained from matter that has been organized by the vegetable, and there is no more propriety in giving calcic preparations to produce good teeth, than there is in administering carpet tacks to enrich the blood.

"STILL HARPING ON MY DAUGHTER."

The editor of the *Dominion Dental Journal* so heartily despises American dental colleges, and American dental degrees, and American affairs generally, that it is a matter of greatest surprise that he has ever been extremely desirous to obtain the American dental degree, or to remove to America and assume a place in American dentistry. If the American degree has proved itself an exceedingly sour grape, it must have hung altogether too high to be "dragged through the mud," as the respected editor intimates. Americans and foreigners generally find no mud on our college diplomas of the present day. If our good friend finds them so befouled, he will do well to let them severely alone. We are year by year raising our status. Our early educational system was far from perfect, but it should not be forgotten that there were no precedents for our guidance when it was established. No other country at that time made any pretense to a dental educational system, nor did they do so for years afterward. By that time American educators had gained an experience and knowledge that enabled them easily to keep up their lead in progress. At the outset our American medical colleges saw nothing in dentistry to warrant an affiliation with it, and they gave it the marble scapula, as McGill University lately treated the "Dental College of the Province of Quebec." Perhaps the latter institution may yet improve its curriculum and its methods sufficiently to enable McGill in time to recognize it, as Harvard, and Michigan, and Pennsylvania, and California, and Lake Forest, and Western Reserve, and Buffalo Universities have recognized American dental teaching.

"POPULAR SCIENCE NEWS."

Every dentist should take some good scientific journal. This is essential if he would keep pace with professional progress, for dentistry rests upon physical science. If the practitioner does not keep posted in the progress of that on which his practice is based, how can he retain his position in his profession? He should make it a point to study some good journal in science, that his practice and his knowledge may not become narrowed by restricted views. If he reads nothing except professional journals, while he may keep in touch with his professional brethren, he will find that when in the society of men of other professions there is no common ground on which they can meet for the exchange of views, and the dentist will pass for an uninstructed man.

We can most heartily recommend to dentists the monthly journal, *Popular Science News*, which is the successor of *The Boston Journal of Chemistry*, but which is broader in its scope than that favorite journal. If any dentist will send one dollar, its subscription price, to its office, 19 Liberty Street, New York, and will read it for one year, he can draw on the editor of this journal for a return of the money if he has not been benefited many times that amount.

PROF. GARRETSON.

In this number will be found complete the addresses delivered at the Garretson memorial meeting held in Philadelphia, March 3d, ult. Seldom has there been shown such a general desire to honor the memory of any man, as has been exhibited by the dental profession in this case. His death was a loss, not only to dentistry, but to the world at large.

Prof. Garretson is succeeded in the Faculty of the Philadelphia Dental College by Henry C. Boenning, M. D. The new incumbent is not a dentist, and has had no dental affiliations, except as a demonstrator of anatomy in the Philadelphia Dental College. He is said to be a competent surgeon. There is a disappointment in many circles that Dr.

M. H. Cryer, who has for years been the assistant of Prof. Garretson, was not advanced to his place, as he is so favorably known in dentistry.

Prof. J. Foster Flagg retires from the Faculty because of poor health. Dr. S. H. Guilford succeeds Prof. Garretson as Dean of the Faculty. A great deal of bitterness is expressed toward certain medical men of the Medico-Chrurgical Faculty, because it is charged that they betrayed Prof. Garretson's confidence, robbed him of the fruits of his labors, and were really responsible for the grief and chagrin that it is believed shortened his days.

DENTAL SOCIETY OF THE STATE OF NEW YORK.

The 28th annual meeting of the above society will be held in Geological Hall, Albany, on the 13th and 14th of May, prox., to which the profession is invited.

The following is the programme :

"Pyorrhœa Alveolaris—its Causation, Diagnosis and Treatment," . . . .
C. N. Peirce, D. D. S., Philadelphia.

"Professional Fees," . . . .
S. G. Perry, D. D. S., New York.

"The Application of Medicaments in Pathological Conditions of the Oral Cavity," . . .
M. W. Foster, M. D., D. D. S., Baltimore.

"The Latest Achievement in Dental Art," . . . .
R. Ottolengui, M. D. S.. New York.

Report Committee on Practice, ...
M. L. Rhein, M. D., D. D. S., New York.

Chas. S. Butler,
Secretary, Buffalo.

H. J. Burkhart,
President.

ILLINOIS COLLEGES.

There are in Chicago about thirty charters for dental colleges, that have been granted by the Legislature of Illinois. Formerly a charter for an educational institution was granted to almost or quite any one who would pay the fee for engrossing the bill—about three dollars. This has been "reformed" by raising the fee to twenty-five dollars. The law was originally intended for the benefit of business associations, but it was soon found that it would cover educational institutions as well, and a considerable proportion of the quacks of Chicago have charters for their private offices, which are, of course, unrecognized. Efforts have been made by the reputable portion of Illinoisans to secure a repeal of the act permitting these things, but Southern Illinois, "Egypt," is in a state of such dense ignorance and darkened intelligence that it steadily defeats the movement. They don't believe in an "eddicated" profession down there, and claim that it would only result in their having to pay twenty-five cents instead of fifteen for pulling teeth if they gave way. But it does seem as if there should be enough of intelligence in the legislature of the State to realize the amount of harm that such heathenish acts may do, and to secure the proper cleansing of the statute books.

A NEW STYPTIC.

Prof. Roswell Park, of the University of Buffalo, says that he has found very useful as a spray for checking the oozing of blood during operations, a 5 per cent. solution of antipyrin, made up with sterilized water. This has been tried by many surgeons and found to have no deleterious effect, no matter where it is used. Prof. Park has since found that a combination of antipyrin and tannic acid is still more useful. This mixture precipitates a thick, gummy cohesive substance, which offers the most ideal styptic for certain purposes. An alcoholic solution of tannic acid is used, and antipyrin added in quantity sufficient to form a precipitate of required consistency. This substance is particularly useful in hemorrhage from bone, for instance, in operations upon the cranium. A small piece of sponge or cotton sopped in it may be forced into a bleeding tooth socket, and in many other ways it may be very useful. There is but one attendant difficulty, due to its remarkable cohesiveness, that when the time comes for detachment or separation, it is difficult to remove it. Sometimes it has been necessary to wait for the formation of granulations and separation by natural process.

COMMENDABLE LIBERALITY.

Dr. James McManus, of Hartford, Conn., has presented to his Alma Mater, the Philadelphia Dental College, a medallion from the clay model of the memorial tablet that was erected in Hartford, last year, to the memory of Horace Wells, the discoverer of anæsthesia, and which Dr. McManus was largely instrumental in securing. The medallion bears the following inscription:

1844. 1894.
DR. HORACE WELLS.
A Medallion taken from the Clay Model of the Memorial Tablet erected
in Hartford, Connecticut, on the Fiftieth Anniversary
of the Discovery of Anæsthesia.

Presented to the Philadelphia Dental College by James McManus, D. D. S.,
Class of 1865.

ARTIODACTYLLA AND PERISSODACTYLLA.—No living representative of the animal kingdom has more than five digits, toes or claws, to each foot, hand or limb. The horse is the type of one-toed creation, the camel of two-toed, the rhinoceros of three-toed, and the hippopotamus of four-toed animal life. The elephant and a great many other animals belong to the five-toed class. The most of the unguiculates, or animals with claws, as distinguished from the ungulates, or hoofed animals, have five toes.

There is no diphyodant animal, or one that has both deciduous and permanent teeth, that has more than six incisors, two cuspids, eight pre-molars, or eight molars on either jaw. In fact, there is none that has all these teeth, although some have all of one kind, with a deficiency in some of the others; hence, the formula of the great archetypal diphyodont dentition must be:

$$\text{i. } \frac{3-3}{3-3} \quad \text{c. } \frac{1-1}{1-1} \quad \text{pm. } \frac{4-4}{4-4} \quad \text{m. } \frac{4-4}{4-4} = 48.$$

THE DENTAL JOURNAL, PUBLISHED BY THE DENTAL SOCIETY OF THE UNIVERSITY OF MICHIGAN, is what its exceedingly long name intimates—the organ of the Dental Department of Michigan University. Conducted by the students, it is exceedingly creditable to them, in both its general appearance and its literary character. It is gratifying to see that it does not advocate the multiplication of degrees in dentistry, nor favor the dilettanteism of changing the accepted D. D. S. for the affected D. M. D.

"DESMOS."—This journal, the organ of the "Delta-Sigma-Delta" fraternity, has been much improved, and now presents a very peculiar but pleasing appearance. Under the editorship of Frater L. L. Davis, it also gives an interesting table of contents, with reports from the various chapters in each number.

A SYSTEM OF ETHICS.—*The Dental Digest* very modestly says: "Our object is to furnish the dentists with a readable journal, which is something they have not got at the present time." "In making reviews we lead; others follow." "No other journal has such readable matter." And *The Dental Digest* aims to be a professional journal, and a teacher of dental ethics. The proprietor and editor of that journal would not conduct his practice in the same manner, nor advertise it in the same offensive way? We will not speak of his dental depot, because we might be told that was a business venture, and did not pretend to follow professional ethics. Yet it would seem that one who claims to be a member of the profession should be governed by professional ideas, whether in conducting his office, his journal, or his dental depot, so long as he appeals to members of the profession for support in all these enterprises.

CULTIVATED PLANTS.—Although they must originally have been evoluted from a wild state, yet, paradoxical as it may seem, there are a number of our best known and most valuable cultivated plants which are already extinct in a wild state, or are fast becoming so. Of plants of this class the following may be mentioned: Bean, chick-pea, ervilla, lentil, tobacco, wheat, Indian corn, and probably sweet potato. Some of these have never been seen in a wild state, while others have become so exceedingly rare that apparently it is only a question of a comparatively short time when they will have disappeared absolutely.

The species mentioned have been so long in cultivation, and have been so profoundly modified, that they have not the faculty of sowing themselves and propagating indefinitely outside of cultivated ground, so that if they should cease to be cultivated they would soon disappear from the face of the earth.

THE ILLINOIS STATE DENTAL SOCIETY.—The thirty-second annual meeting of the Illinois State Dental Society will be held in the Senate Chamber, Springfield, Ill., May 12 to 15, 1896. The executive committee has been especially fortunate in preparing a very interesting program. No member can afford to be absent. Dentists practicing in the State are cordially invited to attend, and, if possible, to become members of the society. The profession outside of the State is always welcome to these meetings. The hotels and railroads have granted the usual reduction. Pay full fare in coming and take receipt therefor. This, when countersigned by the Secretary, entitles the holder to return for one-third the usual fare.

LOUIS OTTOFY, *Secretary*,
Masonic Temple, Chicago.

UNIVERSITY OF PENNSYLVANIA.—The Dental Department of the University of Pennsylvania is to have a new building commensurate with its needs. There has been a reorganization of its faculty, and improvements will be made in its curriculum. Dr. Edward C. Kirk is the new Dean and Professor of Clinical Dentistry. He will retire from practice, and henceforth devote his time to the interests of the college and the *Dental Cosmos*, of which he will continue to be the editor. Professors Kirk and Essig lately visited Buffalo on a tour of inspection of dental colleges, preparatory to the introduction of some modifications in the course of study of the University of Pennsylvania.

FOR LABORATORY USE.—Gold dust washing powder is one of the most useful things for cleaning the hands when they have been soiled by laboratory work. It will at once remove the stain left by valcanizer flasks, and is widely useful for general laboratory detergent purposes.

THE TEETH IN LITERATURE.—The teeth have always played a more important role in literature than is known to most persons. From the time of the Patriarch Job (who knew something of dental histology, and had discovered Nasmyth's membrane, as is proved by his reference to "the skin of my teeth"), down to the present day, well known writers make frequent allusions to these organs. It tends to the elevation of our profession in public estimation when this is made known to the world, and hence Dr. Parmele deserves commendation for the task he has imposed upon himself, to collect these data, and he should have the assistance of every dentist who is possessed of literary tastes. His first published collection of such references will be found in this number.

THE IMPORTANCE OF SLEEP.—Prof. Barnes remarks, when a person is unable to secure from seven to ten hours of quiet sleep, something is wrong. If the trouble arises from the neighbors' cats or the frolics of belated revelers, the matter is not serious. But if he finds his eyes wide open, his brain in a whirl and his nerves tense after striving for awhile to woo the drowsy god in a comfortable bed, his condition is a wholesome warning that he is working too hard, worrying too much, is eating something which disagrees with him, or is on the way of being attacked by some disease.

DEAFNESS.—It has taken the medical world a great many years to discover that loss of hearing is almost invariably caused by some disease of the throat, or nose, or oral cavity. But very recent researches in these fields have demonstrated this fact beyond question, and it is now admitted by the most advanced medical men that, aside from rupture of the ear-drum, there is scarcely a symptom of defective hearing that is not traceable directly to the condition of these cavities.

QUITE SO.—"What are you about to do?" said the patient with an aching tooth to the dentist who was getting out his forceps. "I must extract this tooth. You say it pains you all the time, and I will give you gas, so that you won't feel it at all." "But it is the pain I want extracted, and not the tooth," was the answer. "If you can't take out the one without the other, you are altogether too comprehensive in your treatment."

THERMOMETERS.—"Before purchasing a thermometer invert the instrument; the mercury should fall to the end in a solid 'stick.' If it separates into several small columns, the tube contains air and will not register accurately. Nine persons out of ten think the mercurial column is round; but this is not the case; it is flat, and the opening in the tube is as small as the finest thread."

DENTAL ALLOYS.—Dr. G. V. Black is now at work upon a new series of studies of dental alloys, especially to determine the influence of oxidation of the cut alloys when put up by special methods.

TO APPLY LEECHES.—The leech is placed in a test tube partly filled with water. The open end of the tube is then placed against the part, when the leech promptly fixes itself to the skin.

ELECTRICITY.—Twenty-four years ago electricity, as a mechanical power, was unknown. Now $900,000,000 is invested in various kinds of electrical machinery.

THE

DENTAL PRACTITIONER

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ANNUAL ADDRESS AT THE THIRD COMMENCEMENT EXERCISES OF THE BARRETTONIAN SOCIETY OF THE DENTAL DEPARTMENT OF THE UNIVERSITY OF BUFFALO.

BY S. B. PALMER, M. D. S., SYRACUSE, N. Y.

Mr. President and Members of the Society:

I fully appreciate the honor conferred upon me by a call to address you on this, the third commencement exercises, especially as I had the pleasure of speaking to you at a meeting of your society about a year ago.

Recent changes in the dental law excused me from actual duties as examiner on the Board of Curators of the Dental College, and I wrote a letter to the dean saying that the fatigue of commencement exercises would outweigh the pleasure to be enjoyed, and, therefore, I could not be present. This letter in transit passed one from him, which not only invited me to be present on this occasion, but urged an acceptance, with the argument that I had an "old experience" in matters that might be presented to stimulate you, and help to mark out paths and plans for your guidance; and not least, that "the boys" desired that I should consent. It so happened that I had only a few hours' enjoyment of relaxation from college duties, since the obligations to the college seemed to have been manipulated into duty to the members of your society. If I can aid you one-half as much as the letter assured me I could, I will feel well remunerated. One point made in the invitation as to why my name had been suggested was an "old experience." Now, you will observe that professional experience indicates age. An "old experience" would naturally foreshadow second childhood. I suppose that the dean thought I could get down to the boys, and enter more enthusiastically into their needs, comprehend their possibilities, and point out their resources better than one of higher title or more public notoriety.

Age will excuse me for calling you "boys" *tonight;* consideration, however, would prevent me from wounding your dignity by such insinuations tomorrow night, armed as you may be, with diplomas. The exercises upon which you have entered environ the crowning joys and anticipations of your lives. But the diploma, which has been the bull's eye of your aim and ambition for years past, is but a certificate of a preliminary fitness to enter the High School of Dentistry. It is but natural and right that you have before you fond hopes and great expectations. These conditions imply financial success, exalted professional attainments, and a high social standing.

Time forbids discussion upon all these points, so we will pass the first, because there are others with more experience in finance than myself.

Let us consider professional success, or high attainment in dentistry, which is a mass of combined elements, as scientifically arranged as those in any given chemical compound. Call it science of the mind, or metaphysics; it is a metaphysical summary of all the laws, forces and principles of the physical laws which you were taught in the physical laboratory. Now, let us aim at success, and analyze it to ascertain its constituents; with that knowledge you can synthetically re-combine the elements and attain success. In a broad sense success stands for labor, thorough application and research, for resources. Brought to a focus, it means keeping abreast with your profession.

The first element (and it is available to all) is dental literature and careful reading.

The second is dental societies.

The third, writing papers and discussion.

The fourth, regard for public opinion.

The fifth, professional immortality.

The last is not mentioned in text-books, and, being of recent discovery, needs an introduction. Professional immortality is the goal, or highest attainment in dentistry. We will mark out the path and the observances by which it may be attained. Were I ordained to preach, I would choose Professional Immortality as a text.

When I was a boy, ministers of the Gospel were not as numerous as they are at the present time. In the times of church destitutions and congregational disappointments, lay members were called upon to "exhort," which in modern times we would call an evasion of the ordination law. In keeping with the olden times I will exhort you to "good works," and try to stimulate you to attain immortality. This text was given to me recently while in conversation with an eminent progressive divine, who said: "I have been thinking much about a doctrine lately introduced, called conditional immortality"; by which is meant that only those are immortal who have been born again—have been born of the spirit, have newness of life, etc.; others drop out without record and are known no more.

Let us call this a parable, and apply it to the age in which we live, and to the calling in which you are about to engage. All that you are, or can possibly be, during life, will be treasured up in history. From this time on you will be writing your own history, and there is only one record open to you, or means by which your attainments can be preserved, and that is in the transactions of dental societies, as written in the history of dentistry.

I have been invited to speak from experience, of the benefits of dental societies in relation to their members, and their influence upon the dental profession. I speak from forty-seven years of practical experience. What I have attained I owe to strict application to practice, dental societies and dental literature.

I will not attempt to give you a history of dentistry, but will confine my observations to my own time and experience, and bring before you the means used to make up for the misfortune of having to graduate from a private office, without diploma or degree. Having witnessed nearly all that can be claimed as dental science, or dentistry as a profession, I have become familiar with the elements that enter into success and immortality.

In 1849 I commenced practice. There were no dental societies within reach; no dental laws; no registration; consequently no transgression of dental laws. There were no means of improvement, except through the dental journals.

Those available at that date were *The American Journal of Dental Science*, issued in 1839, being the first dental journal published in this or any other country. *The Dental Register of the West* was issued in 1847; also in the same year was issued *The Dental News Letter*. For a period of six or seven years the above-named journals were the only helps to me in practice, and they were helps indeed. There being no other means of outside knowledge of dentistry, the careful reading and application of the principles therein contained laid a foundation for private study and personal investigation, upon which my present understanding of dentistry rests. *The Dental News Letter* changed its title and appeared as *The Dental Cosmos* in 1859.

Six years after commencing practice, some noble self-sacrificing dentists joined in organizing the American Dental Convention—a national mass-meeting of such dentists as desired knowledge. There was no condition for eligibility to join, and no other requisite than enrolling the name and payment of dues. In spirit and working it was a Salvation Army movement among dentists. It was then as now; but a minority of the dentists joined. To me the advantages were great and fully appreciated. In a few years' attendance at different points in the States, the members became acquainted with those who earned immortality, because their names are now engrossed in the early history of dentistry. When this movement had encompassed the States, another and higher was inaugurated. In 1859 the present American Dental Association was organized, with a requirement that members would be received as *delegates* from local societies only. This seemed to be a set-back, as there were no local societies in Central or Western New York. As it proved, however, there was wisdom in the conditions for membership. There are those present who well remember the organization of the Western New York Dental Society, which occurred in Rochester, in 1862, at which time delegates were appointed to the American Dental Association to be held in 1863. Thus Buffalo, Rochester and all of Western New York was provided for. In March, 1863, the Central New York Dental Society was organized, and the speaker was appointed a delegate, and joined the American Dental Association with the delegates from the Western Society, and still retains membership.

It is evident that the delegates who presented credentials, obtained by so much perseverance in that early day, believed in the doctrine of professional immortality. This brings our experience down to the organization of the Dental Society of the State of New York, which occurred in 1868, including eight district societies. This was the birth of dental laws in this State, which are the outcome of dental society activities. Dental societies are progressive dental schools, which one must attend who desires to immortalize his name and have it perpetuated beyond his service at the dental chair.

Dental periodicals are text-books used in these schools; and more than the college text-books, they are revised monthly or quarterly. No practitioner can afford to do without them, and no one can succeed who does not read them.

It should be stated that with the advent of the State Society, and with an equal distribution of district societies, there was no more use for the local organizations. They did good work for dentistry, and their labors were absorbed into the district organizations. We feel all we say in regard to the benefits of dental societies, and we will pass this point and conclude with *Public Opinion*—an important element in dental success. We do not underrate the observance of the code of ethics. You have probably been lectured sufficiently upon this subject. Much of success in business and peace of mind will depend upon the reflex action of public opinion, which is a condition of self-creation—a composite photograph upon the "X rays" principle, of your deportment in discharge of your professional duties, your honor, your integrity, and social standing. Every patient is a reporter with a pen or pocket kodac that takes an estimate of your person or acts. The child instinctively gains confidence by truth and gentleness. It loses confidence beyond redemption by deception and harshness. Nature in the endless variety of human beings has created some people as mentally angular as a grain of buckwheat—a sharp corner at every turn. Dentists, as well as patients, are sometimes so unfortunately made up. Rounding off the corners can be done by mental discipline. Study your patient's disposition, which is easily done; you can read it in the countenance; you can detect it in the voice; you are assured of these conditions by involuntary nervous excitement. Beware of an attempt to overcome these tendencies by like manifestations. Kind indulgences in allowing others to think that they enjoy their will, while by tact, you put your own into practice, will accomplish more than an exhibition of professional dignity. It will be impossible for you to advance in theory or practice beyond that established by custom, without criticism and opposition. Let none of these discussions extend beyond the profession. Avoid piques and personalities. The speaker has had no little experience on this line, and withal has never broken a friendship. Do not reply to an aggravating correspondence in haste; consideration often suggests "a soft answer." There are conditions where silence would be wisdom.

A number of years ago a dental organization employed a physical scientist (not a dentist) to conduct electro-chemical experiments for its members. We were called upon to send our theories for analysis. In the request the gentleman said: "I don't believe in the theory, and I will contest every sentence." Think of a physical chemist criticising operations performed in the oral cavity, in connection with vital organs. To have refused the request would have been pronounced cowardice; to have complied, would have been giving a theory to one who knew nothing of the conditions, and had no knowledge of dental chemistry, and more—one who had prematurely declared his opinion. That correspondence was never answered.

In closing, gentlemen, I wish to impress upon your minds this fact: The high attainments that you desire are the result of a combination of the following elements: Reading dental literature, attending dental societies, keeping out of debt, showing charity for all the beliefs and conditions of others, with a high regard for public opinion.

Combine these elements and you will attain *professional immortality*.

AMALGAM AND AMALGAM FILLINGS.

BY THOMAS FLETCHER, F. C. S., WARRINGTON, ENGLAND.

On page 74 of the last issue is a printer's error, dividing a sentence, which entirely alters its meaning. What I intended to say was, that I had never succeeded in making a really satisfactory plug, with any amalgam made with an alloy with which an excess of mercury had been mixed. I have made thousands of satisfactory ones by other methods.

The one important question which experiments with amalgams are intended to settle, has apparently been lost sight of. Given, materials which have to be used under specific conditions, the question is, which of these materials under the same conditions in the same cavities and in the hands of the same operator, will give the most perfect results.

Every operator should test his own skill in this manner with different materials, in cavities of equal size, when wedging is difficult or impossible. I have not forgotten a "round robin" in the form of a block of ivory, drilled with a number of holes, one of these holes being filled with gold by each of a number of celebrated operators, connected with a well-known university, the block being afterwards immersed in colored water and then split open. *I saw the result,* and silence is golden. *It is not necessary for* ANY *filling to be water tight.*

Microbes have a form and size visible under the highest power of a microscope; the particles of color in a perfect solution in water are so small as to be totally invisible under any microscope known, and if a filling will exclude colored water or ink, any fluid which can penetrate is of necessity sterilized, and inert. The body of the tooth contains water, and if the cavity is not dried and made absolutely water tight against the substance of the tooth itself, the exclusion of sterilized water is unnecessary. One question remains: whether in drying and varnishing, the surface of the cavity is not killed, and whether the death of this surface is not an objection rather than otherwise. Dead or alive, all experiments go to prove that, so long as any fluids which have access are sterilized no change is possible. It is not necessary to bandy words about micrometers, microscopes, steel tubes and other elaborations. They are elaborations which make us forget the real question at issue.

Dr. Black and myself appear to be very much at cross purposes, and I can only suppose that this is caused in the apparent meaning of many words in this country as compared with the American meaning, and for this reason I do not appear to have made myself clear.

In the first place, I have never found any alloys of silver and tin alone worth the trouble of experimenting with. They appear to have defects which, in one way or another, bar them from use in any exact work.

When Dr. Black treated the fluid amalgam removed as "pure mercury," and regarded the proportions of alloy removed as "too insignificant to produce a perceptible change," it would have been better to have borne in mind that what one thinks is of very much less importance than what one knows. As a matter of fact, the metals removed are in many cases sufficient to enable the "pure mercury" to become more or less solid.

My own experiments in this direction were not recorded, but it is a very simple matter to get at the quantity of alloy removed, by taking a known weight of the so-called "mercury" and heating it to redness under charcoal, in a crucible. This, although not exact, will be near enough to show that the matter is not so insignificant as Dr. Black imagines. The shrinkage of alloys of silver and tin is not of any importance. As I said before, alloys of these two metals alone are not desirable for amalgams; and shrinkage is not a necessary property of amalgams. The "dryness" of amalgams mixed with excess of mercury and squeezed, and that of amalgams properly mixed without excess, cannot possibly be "about the same." The process of separation given above will show that the quantity of mercury remaining is about double in the squeezed amalgam; the latter, hard or soft, is a *paste* which flows in all directions under pressure.

Dr. Black's remarks about "spheroiding" appear to show that this expression has two totally different meanings. The spheroidal tendency is understood in this country to mean that a mass *as a whole* has a tendency to lose any given shape in an attempt to become globular in form; not that sharp edges or surface marks will disappear from a comparatively hard mass, but that the surface, if flat, shall become convex, and projecting angles have a tendency to draw closer together, producing an appearance which is wrongly called shrinkage.

Dr. Black states that "if a filling as a whole shrinks or expands, certainly a perfectly flat surface like that of a mirror will be warped." This, according to the known laws of nature, is not correct, and if it is a fact proved by direct experiment, I should very much like to know the precise composition of the alloy used.

So far as I am aware, no amalgam exists which will either contract or expand, and which is also absolutely free from the spheroidal tendency. Dr. Black's statement is so clear and positive that I should like to be put in a position to repeat his experiment under proper conditions, as there must be some reason for the result other than the one given. The surface of a spheroiding-mass does not "warp," *i. e.*, it does not twist and become irregular. A flat surface becomes *convex*, a result very different to that commonly understood by the expression to "warp."

As to making fillings wet, "the walls of the cavity cannot be perfectly dried by the filling," to quote Dr. Black's words. It must be remembered that the walls of the cavity in their normal state, like all living tissue, contain water, and life depends on the presence of this water. Particles of amalgam cannot weld if a film of water exists between them, and if a plug is packed in solid and welded solid throughout, it is not easy to see where the water can be if the space between the plug and the cavity remains color tight.

Without advocating the use of wet packing, I simply stated a fact which is worth noting. Dr. Black makes a special and strong point of "doing our work with exactness," and there I go with him fully, but until the use of an alloy of tin and silver alone is discontinued, and until experimenters take the trouble to learn the result produced by the squeezing process, any approach to "exactness" is impossible. There is one curious and most important factor in the results which has been overlooked or ignored by most if not all experimenters, and this is the extraordinary speed of hardening caused by the use of a small percentage of platinum in amalgam alloys containing silver. If the amalgam is worked after this primary hardening has properly commenced, the result is not satisfactory, and the plug shows defects which would not have existed if no time had been lost in the packing. This property of platinum causes both good and bad results, depending entirely on the knowledge and expertness of the operator, and any experiments which do not take it into account, are unreliable.

In criticising Dr. Black's results, I have only been able to refer to the article published in the PRACTITIONER, and the full details might possibly affect the criticism. With regard to the tin and silver alloy, I have taken it for granted that this alloy without additions was used for the experiments, as the two metals are so specifically referred to, and if this is the case, it is to be regretted that time has been spent on so ancient and worthless a material.

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AMALGAM AND AMALGAM FILLINGS AGAIN.

BY G. V. BLACK, M. D., D. D. S., JACKSONVILLE, ILL.

Through the kindness of the editor of the PRACTITIONER AND ADVERTISER I have received the proof sheets of an article by Thomas Fletcher, of Warrington, England, entitled, "Amalgam and Amalgam Fillings." In the second paragraph of this paper we find a sentence beginning: "Given, materials which have to be used under specific conditions, the question is—" &c.

Now the question recurs: Are the conditions understood? Are the conditions of the material used understood? Are the conditions of the material in which fillings are placed understood? Partial experimentation in any department of physical science is likely to lead to false conclusions, and to the announcement of dangerous doctrine. In the next paragraph of the article one of these appears. A number of celebrated operators made fillings of gold in cavities formed in ivory—dry, we suppose—and placed them in colored water. Afterward the ivory was split, and the walls of the cavities were found stained. The fillings had leaked. These gentlemen were known to be good operators, and successful operators; hence the conclusion—"*It is not necessary for* ANY *filling to be water tight.*"

A conclusion more false and harmful in its tendencies than this can hardly be imagined. It strikes at the fundamental principles of filling teeth; the principle that all extraneous matter—extraneous moisture included—must be stopped out of the cavity. Now, how does this occur? The experiment has been correctly reported, and yet the conclusion is wrong. The fact is, the gentlemen making this experiment did not understand the physical qualities of the material in which the fillings were placed, or they would not have made such an experiment. If they had made accurate studies of the hygroscopic qualities of the ivory, they would have learned that under the conditions the fillings could not do otherwise than leak, no matter how perfect the adaptation to the walls of the cavities at the moment of their completion.

Although I explained this in the *Cosmos* only last year, I wish to enforce it here for the reason that this class of partial experimentation is often doing harm. A gentleman, who was experimenting with amalgams, wrote me that a certain filling had spheroided badly, while fillings made from the same alloy at an earlier date had shown no such tendency; and asked for an explanation. Having learned the particulars as to localities and dates, I found that this particular filling had been made in a block of ivory in a distant city, dressed down level when set, and sent to the experimenter. Reference to the hygrometric reports from the two cities showed that the filling had been put in in a very damp atmosphere, and that the examination had been made in a very dry atmosphere. The experimenter was advised to place some slabs of ivory in water for a few days, then dry them well with napkins, cut cavities, fill them at once with any amalgam he might choose, return them to the water until the amalgam had fully set, remove from the water and dress them flat, then leave them to dry in the open air, and examine them a week later. In the result he would find the explanation he sought. He did this, and every filling spheroided, rising as much as one and a half hundredths of an inch above the level of the ivory.

Why is this? Ivory absorbs moisture and expands. When it dries out it contracts. This contraction causes the cavities to become smaller, and the amalgam, yielding to the pressure of the walls of the cavity as they contract upon it, is squeezed partly out of the cavity, and in this movement rounds up in the center like ice that has formed in a strong drinking glass. It spheroids. It is a mistake to suppose that because amalgam is brittle, and flies to pieces at a blow, that it is an unyielding substance. No matter how long it has been set, or hardened, it will yield slowly to comparatively gentle pressure, and may be moulded into type and other intricate forms without breaking. This is called the *flow* of amalgam. The strength of the ivory, or of the walls of an ordinary cavity in a tooth, is sufficient, in case the amalgam expands, or the ivory contracts, to cause the amalgam to flow a little out of the cavity, and in this movement it rounds up in the center, or spheroids. The fact that ivory is sensitive to changes of moisture in the atmosphere, is nothing new. It is well known that ivory billiard balls absorb water, and for this reason expert billiard players refuse to play in very damp weather. The balls become heavy, loggy, and uncertain. I turned a light ivory scale pan, and fixed it on my most delicate scales. I had persons balance this, and then after talking for a short time would refer them to the fact that the scales were out of balance. They would try it again, and again, but unless the weather was in a very settled condition, the hygrometric differences due to the times of day, would continually throw the scales out of balance, the material is that sensitive to hygrometric conditions.

Gentlemen have made fillings in dry ivory, and have thrown them into colored water. Expansion of the ivory has occurred that has enlarged the cavities, and the fillings, however perfect the adaptation when completed, have leaked. That they should do so is inevitable. The physical conditions compel this result. Yet gentlemen not investigating far enough to understand the conditions, announce the conclusion that it is not necessary that fillings be tight, and in this wise unwittingly aim a blow at the foundation principles of filling teeth. I hope it will be understood that fillings cannot be kept tight in ivory without perfect control of the hygroscopic conditions, a thing impracticable in experimental work of this nature.

Turning now to the glass tubes and colored fluids so much relied upon in past experiments, I will ask how many have thought to test the thickness of the sheet of these fluids that becomes apparent to the naked eye. When this is found for any one of them, it will be discovered that whole families of micro-organisms may play at hide and seek in the space occupied by the fluid. Any one may see how these fluids thin out and become transparent, by placing some between plain plates of glass—they must be clean—and making pressure here and there to bring the glasses very close together. I am aware that these fluids will go into spaces so narrow that micro-organisms cannot enter, and if there is some substance of a semi-solid, or solid nature present, that will absorb the color strongly, as many of the micro-organisms will do, and thus intensify it, it might become apparent in very thin sheets. But neither the glass, nor the filling material will do this, and the sheet of fluid itself becomes too thin to be recognized, while it enters with a freedom that is incompatable with my idea of a water-tight filling. Certainly a filling that shows color in a glass tube by this color test, and many do, is a poor filling indeed. The test was well enough in its time, but now that we have far more delicate tests for the shrinkage of amalgam fillings it should no longer be relied upon.

Mr. Fletcher's estimate of the simple silver-tin alloys for dental amalgams seems very low indeed, when he says they are not worth experimenting with. But it must be remembered that these metals are the basis of all of the dental amalgams, except the copper amalgams. At best the addition of other metals can only modify the silver-tin alloy. Therefore if we fail to understand the silver-tin basis, and principle portion of our material, we will certainly fail to understand our alloy as a whole. For my part I wish to understand the silver-tin basis first, and then will try what favorable modifications may be made by addition of other elements. These, so far as tried up to the present time, do not control changes in bulk that occur in the silver-tin amalgams. At best they will only modify these changes. This modification cannot be successfully studied, until we know the silver-tin amalgams very exactly.

As regards the dry mix and the wet mix; that is—a mix with a quantity of mercury that will make a semi-coherent powder, capable of being welded into a firm mass by pressure, and a mix with a quantity of mercury that will make a reasonably soft mass, which is afterward dried by wringing; Mr. Fletcher is entirely wrong as to the comparative quantity of mercury in the completed filling. In my records, April 22d, I find a certain alloy mixed with twenty-five per cent. of mercury, the proportions being carefully weighed. When well rubbed together this mix formed a dark, semi-coherent powder, which I welded into what seemed to be a very solid filling in a steel tube. While I was making this filling, my friend Dr. Powell made from the same mix a number of blocks in steel moulds for pressure tests. The filling shrunk five ten-thousandths of an inch. The blocks tested five days later gave a flow of 11.45 per cent. and crushed at an average of 267 pounds. Immediately after the completion of this filling, a filling with accompanying blocks was made from a mix with an excess of mercury, using from the same bottle of alloy. The material was weighed with care at every step, and when the excess of mercury was wrung out, and the filling completed, it contained 23.53 per cent. of mercury. In this case the effort was not to reduce the mercury to the lowest per cent. possible, but to see how closely I could approach the 25 per cent. for the purpose of comparison. This filling gave a shrinkage of 6 ten-thousandths of an inch, and the blocks made from the same mass while I was making the tube filling, gave a flow of 5.72 per cent., and crushed at an average of 310 pounds. At this sitting I made a third filling from the same alloy, mixing in the regular way, and wringing down to 35 per cent. of mercury. This filling gave a shrinkage of 4 ten-thousandths of an inch, and the accompanying blocks gave a flow of 3.64 per cent. The dry mix is much more inconvenient to handle than the wet mix wrung down, shrinkage is not prevented, and in every other respect the filling is inferior when completed. The idea that the least possible mercury in a filling is best, is an error almost as grave as using the material very soft. If Mr. Fletcher has exact experiments to report, let him give them in figures which he knows to be exact. Then we can compare notes understandingly.

Touching the material carried out with the mercury in wringing out the wet mix, it seems that neither Mr. Fletcher nor myself knows exactly what it is. Therefore we had best let the matter rest, until we have obtained the necessary data to speak from. As to the question of spheroiding of amalgams, I will say that it was understood in this country as Mr. Fletcher seems to regard it, but this view has been proven to have been a deception, or rather, an error of interpretation. As I am able to produce it or avoid it at will any day, I am convinced that I understand it.

In conclusion I will say that I am pursuing the study of the physical properties of alloys for dental amalgams with all the speed that my time will permit, but the time for the publication of results in detail is not yet. I, like others, have made mistakes through partial experimentation, and naturally wish to avoid error in the future, as far as possible. But the true causes of the instability of amalgams is slowly but certainly being brought to light. We have all had wrong notions of amalgam. These wrong notions have been a great bar to the correct interpretation of experimental results, and have prevented an understanding of clinical successes and failures. The alloys in use have rarely been the same in their physical properties for two weeks together, and frequently not for two days together. The same package of alloy, which gives perfect results today, may give bad results tomorrow, or next week, to the same operator, with precisely similar manipulation, and he has no data whatever by which he may discover the changed condition. The circumstances and conditions controlling these changes are gradually becoming clear, and the exact character and amount of the change is being noted in connection with the conditions causing it. The prospect that we may sometime have alloys that will be stable in their physical properties has for some months been dark indeed, but now there appears a strong ray of light that may or may not develop into certainty as the experimental work proceeds.

"POINTS" IN OPERATIVE DENTISTRY.

BY C. E. FRANCIS, D. D. S., NEW YORK CITY.

"To teach new 'tricks' to aged specimens of the canine race is a somewhat difficult undertaking." This rule is also applicable to members of the human family, many of whom having once become thoroughly familiar with certain ways and methods of management, are not disposed to step outside the borders of well-worn ruts through which they long have traveled, and venture into new paths, even though the latter may appear smooth and easy.

In our specialty we observe that certain habits and peculiar methods of manipulation have become so deeply rooted within our very being, that we persistently cling to them despite the fact that more modern ways have been devised and demonstrated which exhibit evidences of progress and improvement.

In the year 1872, Dr. T. D. Shumway, of Plymouth, Mass., a much esteemed member of our fraternity, read a paper before the Massachusetts Dental Society, in which he described a novél method of manipulating gold foil; and later on he demonstrated this method at a clinic before the First District Society of New York, viz.: The possibility of making excellent gold fillings with ivory-pointed instruments, in place of the steel-pointed instruments in general use, and with results fully as satisfactory and effective. All the gentlemen who were present at the clinic viewed with surprise and admiration the skilled manner in which the layers of foil were carried against the cavity walls, and how perfectly they became united under slight pressure. In reply to questions as to the durability or permanency of fillings thus impracted, Dr. Shumway stated that from careful examinations of many fillings introduced on previous occasions, and from various tests he had made, he felt confident that fillings inserted with ivory points were fully as secure and durable as could possibly be made with steel instruments; and indeed he had every reason to believe that the adaptation of the gold to cavity walls was far more perfect. He also asserted that the foil was more manageable when worked with ivory fillers, and the cohesion of layers more easily and readily assured, "with greater ease to the operator and infinitely greater comfort to the patient."

Although the operations of Dr. Shumway gave so much satisfaction and pleasure to the dentists who had an opportunity of witnessing them, very few, if any among them, adopted his manner of introducing fillings, or even gave the ivory points a trial. In a letter recently received from Dr. Shumway, the doctor writes that "more than fifteen years of practice, experience and observation, has convinced me that fillings of cohesive gold made with ivory points, are the most durable fillings that can be made of any material whatever." He also informs me that with all he has written, stated, and demonstrated concerning their use, he is not sure that any other dentist works according to this method.

Several years ago Dr. W. G. A. Bonwill, of Philadelphia, read a paper at a meeting of one of the dental societies of New York, in which he described his peculiar method of packing fillings of amalgam with the aid of Japanese bibulous paper. Small pieces of paper were folded into mats, and as each piece of amalgam was placed within the cavity, over it was placed a fold or mat, and with an instrument the amalgam was worked beneath the paper firmly against the walls of the cavity. This thoroughly condensed the mass and forced the globules of mercury to the surface, where they could be scraped out with the soft portion of the filling, and new pieces added to be condensed in like manner until the filling was completed.

The doctor emphasized the fact that fillings thus condensed were firmer, more secure and durable, and less inclined to shrink or bulge, than when introduced in any other manner.

It is doubtful if Dr. Bonwill's suggestions have been put in practice by a very great number of dentists, but they who have given the bibulous paper a fair trial in this connection have found it invaluable, if not indispensable.

At a recent gathering of the members of the New York Odontological Society, Dr. H. C. Register, of Philadelphia, gave an interesting clinic, in which he demonstrated the value of Japanese paper in the process of impacting fillings of gold, much like the method of condensing amalgam fillings according to Dr. Bonwill's method. The gold worked beautifully beneath the folded paper, and was massed and forced against the cavity walls with slight effort. Dr. Register states with much positiveness that "adaptability," which is one of the chief requisites in the art of tooth filling, is much better secured where paper is used. The gold is also more manageable, and less inclined to "kick" or "ball up."

Any one who has given the paper a fair trial will admit that it assists materially in introducing the gold, especially in the early part of an operation. Its employment has been objected to on the ground that it prevents the operator from seeing just where to place his instrument against the gold; also that it takes extra time, and that fibres of the paper are likely to be worked into the meshes of the filling.

It can hardly be supposed that this new feature in operations will at once commend itself to one unaccustomed to its use, but a little practice will overcome objections and prove its value. The paper should be cut with scissors in small squares, leaving no fringed edges, and folded once or twice. As each pellet or mat of gold is placed within the cavity, a fold of paper with the foil carriers will force it to its place. A fair sized plugger can then be used to crowd it farther into the cavity (still keeping a fold of paper between the instrument and gold), until the cavity is well floored with the gold. After the filling is fairly started, smaller points may be used without the paper, or alternately with larger instruments and paper, as may seem desirable to the operator.

At a meeting of the American Dental Association, held in Philadelphia, 1876, Mr. A. M. Leslie, of Cincinnati, one of the oldest and best known gold beaters in the country, was invited to address the body on the properties of gold as prepared for the use of the dentist. Among other things stated, Mr. Leslie remarked that gold was a peculiar metal, and in order to manipulate it to the best advantage for filling teeth it must be dealt with kindly. He said that too much force was generally applied in packing it, and that the "life" or "spirit" of the metal was sometimes fairly driven out of it by severe manipulation.

Perhaps there is something in this theory, and possibly it is for this reason that ivory points and paper mats have played so excellent a part in the condensation of fillings.

However this may be, it has been clearly demonstrated that the use of bibulous paper is a decided aid in packing fillings of gold, and forms a useful feature in making fillings of amalgam, as also fillings of tin foil or shavings of tin.

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THE DENTAL LAW OF THE STATE OF NEW YORK.*

BY W. A. WHITE, D. D. S.

Report of the Corresponding Secretary of the Seventh District Dental Society of the State of New York, made at the Annual Meeting, held in Rochester, April 28 and 29, 1896.

That I might learn in what estimation the dental law of this State is held by representative college men, I sent letters to the deans or prominent officers of each of them. A considerable number returned me no answers at all. I present the answers received. You will see that they differ considerably from each other, and show that the law is looked at from many different standpoints; some viewing it from a broad, and some from a rather narrow, base. All are instructive, if for nothing else, because they show how different men will see the same thing.

The questions asked were as follows:

Have you read the new dental law of the State of New York?

Do you approve of its provisions? If not, why not?

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*This law was still further amended by the Legislature that has lately adjourned. The very latest emendations with which it has been patched will be found on page 136 of this number. It will be seen that some of the objections previously urged have been obviated.—EDITOR.

Do you believe it will have a beneficial result as to the qualifications of the new practitioner?

Do you think a similar law, adopted by the National Board of Dental Faculties, would have a tendency to elevate the profession and its membership?

FROM PROF. C. N. PEIRCE, OF THE PENNSYLVANIA COLLEGE OF DENTAL SURGERY, PHILADELPHIA, PA.

I am not sufficiently familiar with the New York law to make any intelligent criticism upon it. I have only been interested in what has most interested our students, and that is that students who had entered in the school, previous to the passage of the act, should be exempt from its provisions, so far as requiring a definite educational qualification.

I know it is very difficult to get a law that would not inflict discomfort on some one; but I think it would be more fair were it not go into operation until the spring of 1898. Yours truly,

C. N. PEIRCE.

FROM PROF. BROPHY, OF THE CHICAGO COLLEGE OF DENTAL SURGERY, CHICAGO, ILL.

I trust you will pardon the delay in replying to your letter, but the closing of our college term has given us so much extra work to do, that we have been obliged to neglect our correspondence.

I read the copy of the State law which you sent me, and herewith give you my opinion of it.

According to the letter of the law, I am unable to see how you can elevate the standard of schools, except you provide that individuals coming to New York shall have received an education equivalent to the standard of graduation from the high school. As it now reads, the law provides that a graduate from a poor dental college (one whose standard of admission and graduation is low), can enter into the practice of dentistry in New York State, if he has had the education you require before entering such a college.

I approve of higher education for admission to our colleges, and think the law should be so constructed that no man could enter practice in New York State, unless he is a graduate of a dental college which requires for admission an education equivalent to that obtained upon graduation from a high school.

In communication with Dr. Barrett, he tells me it is the intent of the law to recognize no one unless a graduate from a college which requires for admission at least a high school education.

I think your law is an admirable one in all features but the one mentioned. Very sincerely yours,

TRUMAN W. BROPHY.

FROM PROF. ABBOTT, OF THE NEW YORK COLLEGE OF DENTISTRY, NEW YORK CITY.

I hardly know what to write you in answer to your questions propounded in reference to the new dental law.

To start with, however, I approve of it, or any law that really elevates the standing of those about to enter our professional ranks; for by elevating them, by requiring a higher standard of education than heretofore, every practitioner in the State, and I might say, in the whole country, is raised in the estimation of all educated people. Those who oppose the law in this State, do so because they are indifferent as to the standing of the profession, or are afraid the demand is so much that it will keep our college classes ruinously small. This last I think is an error, as we are now upon our third year of advance in requirements to enter college, and we have not suffered to any extent as yet.

It would be a glorious thing for the specialty of dental surgery if the members of the National Association of Dental Faculties would muster courage enough to adopt the same requirements demanded in this State for entrance to all the colleges belonging to that association, and adopt some plan by which a central board of censors should know that the regulations were carried out in every instance. This would either bring all colleges to the same standard as far as entrance requirements were concerned, or those who could not come up to it would be obliged to close their doors.

I feel that every dental practitioner in this State should be proud of the new dental law, and that the administration of the law is in the hands of disinterested, honorable, and educated gentlemen.

Very truly yours,

FRANK ABBOTT, M. D.

FROM PROF. EDWARD C. KIRK, OF THE UNIVERSITY OF PENNSYLVANIA, DENTAL DEPARTMENT, PHILADELPHIA, PA.

Replying to your favor of the 25th inst., I beg to say that in the *Dental Cosmos* of July 25th, at page 626, you will find an editorial written by me which gives a full answer to the inquiries embodied in your letter respecting my opinion of the New York Dental Law. Since receiving your letter, I have carefully re-read the editorial in question, and I see no reason to change the views as therein expressed.

Hoping this will fully meet your desires, I am

Yours truly,

EDWARD C. KIRK.

The following is an extract from the editorial referred to.—EDITOR.

The new dental law of New York, which goes into effect August 1st, presents some features which, in view of the prominence of the state whose mandate it is, are worthy of careful study. This is especially true at this time, as the growth of our knowledge by practical experience has developed certain essential principles in dental legislation that should be taken into account in any new efforts in this field, and unless the latest New York law is fully abreast of modern requirements, it should not be unquestioningly accepted as a model law for adoption by other states.

The most striking innovation of this new law is the clause which vests in the Board of Regents the power to suspend a person for a limited season from the practice of dentistry, or to revoke his license unconditionally for sustained charges of unprofessional or immoral conduct, or of gross ignorance or inefficiency in his profession.

By process of law to deprive a citizen of his means of livelihood is in itself a serious matter, and in no case should it, nor, in fact, can it, be permitted, excepting where it has been unmistakably proven that the pursuit of a calling by an individual is a distinct menace to public health, life, or morals. In order to determine the justice of such a proceeding, the common law of the country, recognizing the gravity of the question, provides for the trial of the case by a jury.

To vest discretionary power respecting this matter in a board composed of men, even of unimpeachable integrity, is an innovation so radical that a question of its fundamental legality may well be raised on the ground alone of its repugnance to the common law of the land.

Examination of candidates for license to practice dentistry in the State of New York is provided for in the new law by the creation of a Board of Dental Examiners, who, under the wording of the law, become practically an autocratic body. The character of the examination, the educational standard to be attained, are left absolutely to the discretion of the Board of Examiners in connection with the Board of Regents.

The clause relating to this important feature is as follows:

"The board, in connection with the regents, shall frame rules from time to time for the regulation of their own proceedings and for the examination of candidates for license to practice dentistry."

There is no specification of the subjects upon which the candidate must pass an examination, and no provision for appeal from the findings of the board in case the applicant has reason to question the fairness of the examination.

Further, it is not evident from its wording that the law is mandatory with respect to the examination of all candidates for license to practice within the state, graduates and non-graduates alike.

In the *Dental Cosmos* for July, 1894, we discussed at some length a similar state of affairs with respect to the dental law of Pennsylvania.

Let us by all means throw every possible safeguard around our professional fabric, and exclude from it the incompetent, the inefficient, and the immoral; but in doing this see to it that no injustice is done by excluding the worthy. To vest a Board of Dental Examiners with absolute power to make law, to fix the destiny of men without let or hindrance, to establish their own rules of government and their own standards of examination,—a law that directs that they shall satisfy themselves without providing for appeal from their findings, or fails to provide for examinations, the results of which may be used in evidence in case of appeal, is, in our opinion, not only improper legislation, inequitable and unjust, but it implies a degree of infallibility upon the part of the board which, in the present stage of human weakness and frailty, is hardly warrantable. Such laws should be replaced by legislative enactments more in harmony with the fairness and equity which characterize our American institutions.

FROM PROF. BARRETT, OF THE DENTAL DEPARTMENT OF THE UNIVERSITY OF BUFFALO, N. Y.

Your letter of inquiry is at hand, and I answer it with great pleasure. I have read the dental law of the State of New York, and I believe it fraught with great good to the dental profession. It is most distinctly a raising of the standard of requirements, and especially of preliminary education, and we can never have a profession that shall have the respect of the world until we become an educated body. This latter can never be attained until the standard of preliminary requirements shall be raised to a point that shall secure an education sufficient to qualify a man for professional study, and the comprehension of scientific principles. Some state must take the initiative in this work, and New York as the Empire State should be the one. The standard of preliminary requirements should be one that is inflexible, and its interpretation should not be left to interested parties. Heretofore the deans of colleges have made the examinations, and it is notorious that however high might be the requirements published, as a matter of fact in most cases almost or quite none have been excluded, or failed to pass the examination. The law of the State of New York takes this matter out of the hands of the college authorities, and vests it in the central educational bureau of the State, and there can be no favoritism shown by them. The qualifications will be the same for all, and the rules rigid.

The examination for entering upon practice will be taken out of the hands of the colleges, and all students will be made to pass precisely the same ordeal. There will be the liability to the charge that the examinations are not made by men who know the college curriculum, but only experience will determine how the regulations will work practically.

The law will undoubtedly work a hardship for New York colleges until it shall have been adopted by the schools outside the State, for it will drive incompetent men to those schools. But there will be the safeguard that they cannot return to this State to enter upon practice, although it will not prevent their practicing in other states. If it shall be possible for the National Association of Dental Faculties to adopt the same regulations and requirements, then that difficulty will be overcome. Certainly the influence of the dentists of the State of New York should be exerted in that direction. If we shall accomplish nothing else, we will secure for the future an educated body of dentists for our own State.

The centralization of educational matters in the hands of a State bureau brings with it the possibilities of the most perfect system of education possible. It also brings with it certain dangers, but I believe that these can be averted, and that under the present system New York will have the best educational law that it is possible to secure. There needs patience until it is in perfect working order. There are imperfections as it now is formulated, but time will remove these if the professional men of the State, who are now all working under the same regulations, will stand as a unit in defense of the law. Every profession of the State should feel the importance of the educational work of the next few years, for all are alike interested in it. The same regulations as to entrance or matriculation; the same laws as to the curriculum to be followed; the same length of term of study, and the same system of examinations for entrance upon practice exist among all the different professions, and all the branches of those professions. For the first time in the history of the world, so far as my knowledge goes, all professional interests are united, and law, medicine, and theology, with all their subdivisions, work under the same organic regulations. The whole world should be united in fairly trying the experiment of making them professions in fact as well as in name. Very truly yours,

W. C. BARRETT.

FROM PROF. SMITH, OF THE BALTIMORE COLLEGE OF DENTAL SURGERY, BALTIMORE, MD.

Your first letter, so long unanswered, was received while at college, and pocketed with the intention of answering it at my convenience. As you suspected, the closing sessions of the college, with the presence of a good many out-of-town people, has occupied my time and attention of late.

I am afraid you misrepresent me, when you call upon me for a response from the Baltimore college. Dr. M. W. Foster, 9 West Franklin Street, is the dean of the Baltimore College of Dental Surgery.

I question very seriously whether it be possible to secure candid and straightforward criticisms of the New York law through the method you have adopted, as of late college men have been reluctant to put themselves on record in opposition to the tide of sentiment in favor of the extension of the course, and an increase in the requirements for the practice of dentistry. Of course we cannot question the desirability of making a man who is a candidate for this honorable position a well equipped man in every particular; but I do not hesitate to say that, like all reforms, this notion seems to have run mad in the minds of some of its promoters. I believe we should gradually come up to an ideal standard.

At the meeting of the New Jersey Dental Society, at Asbury Park, one year ago last summer, when there was a wide discussion of the subject of the unification of the dental laws, Dr. Barrett explained the peculiar provisions of the New York act. While its passage at that time seemed to me unfortunate, as the profession was almost ready to favor or recommend one law for all the States; that law, of course, could not be such a radical law as the New York act.

I recorded at the time congratulations to New York, but, from the standpoint of an advocate of one dental law for all the States, I expressed regrets

In my judgment a crime is being committed in this country; men eminently capable of filling their places as reputable practitioners of dentistry, are being harassed almost to death by examinations. I believe one examination should entitle a man to practice dentistry in any State. Make this examination what you please, but let it be the final test. No one who is unaccustomed to conducting these examinations can appreciate the real facts; it can only be done by those who have to undergo them. One member of our graduating class this year lost his life on account of mental strain and nervous excitement caused by undergoing his examinations, which, by the way, he passed with great credit. No man undergoes such an examination without receiving a shock sufficient to deplete his physical health and shorten his days.

I would say it might be feasible for the National Board of Dental Examiners to recommend, for adoption by the various States, a law embracing the good points of the New York law; but, because of the peculiar relations of the University of New York, and the educational institutions of that state, the law in its entirety could not be adopted by by other states. This unique position, placing New York out of sympathy or out of touch with all the other states, deprives the Union of its influence in establishing a uniform act, and is, on this account, in my judgment, most unfortunate.

Again, there it no provision in the New York law for the recognition of certificates from other states having similar requirements. Is not the whole country broader than a state? Is not the welfare of the whole profession rather to be considered than the welfare of one spot or locality?

Surely those who framed the New York act would be glad to see such a law for all the states. Let us hope that the good accomplished there may be an incentive in other localities.

Very truly yours,

B. HOLLY SMITH.

FROM PROF. GORGAS, OF THE UNIVERSITY OF MARYLAND DENTAL DEPARTMENT, BALTIMORE, MD.

When I received your first letter concerning the dental law of N. Y., I was in the midst of my examinations, which were greater this past session on account of our very large classes (over 200 in all), and they were followed by preparations for commencement, making up accounts, new catalogues, &c., &c., and I am not through yet; and then will come correspondence delayed for the same reasons. But the nearness of the 28th inst. warns me that I must write at once, though hurriedly.

I answer your questions as follows:—

1. I have carefully read the N. Y. State Dental Law.

2. I believe that such a law will have a beneficial effect, resulting in the raising of the intellectual ability, and, as a consequence, the scientific acquirements of dental practitioners throughout your state.

3. While such a law will, no doubt, benefit the dental profession in New York and many other of the northern and New England states, there are many other states, notably many western and southern states, where it cannot at the present time be enforced without hardship on many young men who have not the opportunities which the citizens of New York State have to acquire, by State appropriations and State educational systems, the necessary qualifications to enable them to begin the study of dentistry in dental schools.

The time may come, but it does not exist at present, when every state in the Union can present and offer to its young men the same educational opportunities that the New York State does today. Hence, for such reasons, the National Association of Dental Faculties cannot adopt such a law as that of New York.

Prof. Harris, who requested me to inform him as to my answers to your questions before sending them to you, agrees with me.

With many good wishes, I remain, Yours truly,

F. J. S. GORGAS.

FROM PROF. SMITH, OF THE OHIO COLLEGE OF DENTAL SURGERY, CINCINNATI, OHIO.

In answer to your queries regarding the New York State dental law, I have to say that in the main I approve of its provisions. Nominations by the State Dental Society to the appointing power is well, but it is a question if all nominees should be members. The larger number of the profession are outside the State Society, and they claim (with us, at least) that they have no representation on the State Board of Examiners.

I cannot quite see the propriety of conferring a second degree in dentistry, as the M. D. S., for example. *

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* The degree of Master of Dental Surgery, to be conferred by the State Dental Society after examination by the State Board of Censors, was authorized by legal enactment twenty-five years ago, at a time when dental colleges were very few in number, that many old practitioners who had not the advantages of college training might be enabled to comply with the new legal requirements, for New York was one of the first states to secure dental legislation. When, lately, the law was materially amended and changed, this provision was, unwisely, we think, retained, under the mistaken impression that such a paragraph was necessary to sustain the legal effectiveness of the diplomas already issued. Practically the law abolishes the further granting of this or any other irregular degree, by the restrictions that are placed upon it, and the M. D. S., with the B. D. S. and the D. D. Sc., will, it is hoped, soon cease to confuse the minds of the public and detract from the merits of the only fully recognized Doctor of Dental Surgery, for, like medicine, we should have but one degree.—EDITOR.

The provision for a revocation of licenses is well. The question, however, of the legality of such a provision has been raised.

The punishment of those who assume the title Doctor is an excellent feature of the law.

If the provisions of the law can be fully carried out, there can be no question but that it will advance the standard of qualifications of those to come into dentistry.

A law similar to this law is now before the Ohio Legislature for adoption. It is opposed by colleges outside the Faculties Association and some members of the present Board of Examiners, and it is not likely to pass unless the more stringent provisions are eliminated.

Yours truly, H. A. SMITH.

FROM PROF. DUNBAR, OF THE UNIVERSITY OF CALIFORNIA COLLEGE OF DENTISTRY, SAN FRANCISCO, CAL.

Yours of the 25th ult. is just received, and contents noted. I have read the new law governing dental practice in the State of New York, and must say that I do not find it differs very much from that of other states; it is at least no more stringent in its provisions. Stripped of much of its verbiage it would accomplish the same purpose and be less liable to be misconstrued.

The manner of appointing the Board of Examiners is the only correct method, as it insures the selection of men of known professional character and culture for this service instead of political "time servers," who seek thus a spurious gentility.

The provisions of the new law cannot be too strict for my approval. I am in hearty accord with any plan that will lift up the profession. It it to be regretted, however, that New York has not set a pattern for the whole country, in the adoption of a law that might have been universally copied. That feature empowering the board to confer a degree M. D. S., is, in my view, especially pernicious, and would make it impossible of consideration by the National Association of Faculties. There is no question but that a universal law, operative alike in all states, would do more for the upbuilding of our profession than any other movement that could be inaugurated. The New York law does not as yet furnish the best plan of procedure. I am, Yours very truly,

L. L. DUNBAR.

FROM THEODORE MENGES, OF THE AMERICAN DENTAL COLLEGE, CHICAGO, ILL.

Yours of the 25th to hand. I will answer, giving only my individual opinion:

1. I have read the new dental law of the State of New York.
2. I approve of its provisions in the abstract, but I do not believe a

school can be successfully maintained unless it is heavily endowed, if the provisions of the law are obeyed.

3. It would unquestionably exercise a most beneficial influence on the profession, not only of your state, but of the whole country.

4. I do not think it advisable for the National Association of Dental Faculties to adopt the standard set by your state laws, for the following reasons:

The adoption of the standard as mentioned would break up the organization.

More than half of the schools—I would say two-thirds of the schools—would withdraw their membership, were your standard to be adopted.

The National Association exerts a wide and most salutary influence over the colleges of the country. There is absolutely no doubt but that the adoption of this standard would result in the organization of another body. The effect would be an actual lowering of the standard of dental education in this country. The high-grade schools would be compelled to close their doors.

We can best raise the standard of dental education in this country by keeping up a gradual, but continued, pressure. If we separate ourselves too far from the masses we will soon be out of hearing distance. If we wish to attain the results aimed at by your law (and every true educator does wish to attain them) we must keep in advance, but in touch, with the masses. Your law is too radical for this time. That is my judgment. We are not yet ready for it. It could not be made general. If we lead wisely, the generation after us may attain to the conditions of your law. We can only lead up to it.

Very sincerely yours,

THEODORE MENGES.

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PRACTICE OF DENTISTRY.

THE NEW YORK STATE DENTAL LAW AS AMENDED BY THE LAST LEGISLATURE, AND APROVED BY THE GOVERNOR APRIL 17, 1896.

LAWS OF NEW YORK, 1893, CH. 661, AS AMENDED BY LAWS, 1895, CH. 626, 1896, CH. 297.

DEFINITIONS. As used in this article. The terms university, regents and physicians have respectively the meanings defined in article eight of this chapter. Board, where not otherwise limited, means the state board of dental examiners. Registered medical or dental school means a medical or dental school, college or department of a university, registered by the regents as maintaining a proper educational standard and legally incorporated. Examiner, where not otherwise qualified, means a member of the board.

§ 160. LICENTIATES. Only the following persons shall be deemed licensed to practice dentistry:

1 Those duly licensed and registered as dentists in this state prior to the first day of August, 1895, pursuant to the laws in force at the time of their license and registration.

2 Those duly licensed and registered after the first day of August, 1895, pursuant to the provisions of this chapter.

§ 161. STATE BOARD OF DENTAL EXAMINERS. On the first day of August, 1895, the state board of censors of the dental society of the state of New York, as the latter body shall be composed at the date of such appointment, shall become the state board of dental examiners. The existing division of said censors into four classes and their terms of office shall remain the same for the said board, except that said terms shall expire on the 31st day of July in each year. Before the day when the official terms of the members of any of said classes shall expire, the regents shall appoint their successors, to serve for the term of four years from said day. Such appointments shall be made from nominations in number twice the number of the outgoing class made by such society to the regents prior to the third Tuesday in May of each year. In default of such nominations, the regents shall appoint such examiners from the legally qualified dentists in the state belonging to the state dental society. The regents, in the same manner, shall also fill vacancies in the board that may occur. All nominations and appointments shall be so made that every vacancy in the board shall be filled by a resident of the same judicial district in which the last incumbent of the office resided. The board shall convene at the call of the secretary of the regents within not less than two weeks after appointment and organize by electing to serve for one year, a president and secretary. These officers shall be elected annually. No person shall be appointed an examiner unless he has received a dental degree from a body lawfully entitled to confer the same, and in good standing at the time of its conferment, and has been engaged within the state during not less than five years prior to his appointment in the actual and lawful practice of dentistry. Nor shall any person connected with a dental college as professor or instructor be eligible to such appointment. Cause being shown before them the regents may remove an examiner from office upon proven charges of inefficiency, incompetency, immorality or professional misconduct.

§ 162. EXAMINATIONS. The regents shall admit to examination any candidate who pays the fee herein prescribed and submits satisfactory evidence, verified by oath if required, that he:

1 Is more than twenty-one years of age;

2 Is of good moral character;

3 Has the general education required in all cases after August 1, 1895, preliminary to receiving the degree of bachelor or doctor of medicine in this state; and either has been graduated in course, with a dental degree from a registered dental school, or else, having been graduated in course from a registered medical school with the degree of doctor of medicine, has pursued thereafter a course of special study of dentistry for at least one year in a registered dental school, or holds a diploma or license conferring full right to practice dentistry in some foreign country and granted by some registered authority. Any member of the board may inquire of any applicant for examination concerning his qualifications, and may take testimony of any one in regard thereto under oath, which he is hereby empowered to administer. No degree in dentistry shall be conferred in this state till the candidate has satisfactorily completed a course of not less than three years in an institution registered by the regents of the university as maintaining proper dental standards, nor before the candidate has filed with the institution conferring it the certificate of the regents that three years before the date of the degree he has either been graduated from a registered college, or satisfactorily completed a full course in a registered academy or high school; or had a preliminary education considered and accepted by the regents as fully equivalent; or had passed regents examinations representing, for degrees conferred in 1898, one year of academic work, for degrees conferred in 1899, two years of academic work, and for degrees conferred in 1900, a full high school course. The regents may, in their discretion, accept as the equivalent for any part of the third or fourth requirement evidence of five or more years reputable practice, provided that such substitution be specified in the license.

Degrees. A person having lawfully received a dental degree in course from a registered dental school, or the degree of doctor of medicine from a registered medical school, and having thereafter lawfully practiced dentistry for the term of five years, may apply to the regents for the degree of master of dental surgery, which degree the regents may confer after examination of the applicant by the board under such rules and regulations as the regents and the board shall frame. No degree in dentistry shall be conferred in this state on any candidate who has not before matriculation in the institution conferring it, filed a certificate of the regents that he has had a satisfactory preliminary education, which for those matriculating after January 1, 1897, shall not be less than a full high school course.

Licenses. On certification by the board of dental examiners that a candidate has successfully passed the examination and is competent to practice dentistry, the regents shall issue to him their license so to practice pursuant to the rules established by them. Upon the recommendation of the board, the regents may also, without the examination hereinbefore provided for, issue their license to any applicant therefor who shall furnish proof satisfactory to them that he has been duly licensed to practice dentistry in any state or country after full compliance with the requirements of its dental laws, and has been thereafter lawfully and reputably engaged in such practice for five years next preceding his application; provided, that his preliminary and professional education shall have been not less than that required in this state. The regents may also license any applicant on the certificate of the board that after due investigation or examination it finds his education and professional attainments and experience of not less than five years in actual practice to be together fully equal to the requirements for license in this state. Every licence so issued shall state upon its face the grounds upon which it is granted, and the applicant may be required to furnish his proofs upon affidavit.

Registration. Every person practising dentistry in this state and not lawfully registered before this act takes effect, shall register in the office of the clerk of the county where his place of business is located, in a book kept by the clerk for such purpose, his name, age, office and post-office address, date and number of his license to practice dentistry and the date of such registration, which registration he shall be entitled to make only upon showing to the county clerk his license or a duly authenticated copy thereof, and making an affidavit stating name, age, birthplace, the number of his license and the date of its issue; that he is the identical person named in the license; that before receiving the same he complied with all the preliminary requirements of this statute and the rules of the regents and board as to the terms and the amount of study and examination; that no money other than the fees prescribed by this statute and said rules, was paid directly or indirectly for such license, and that no fraud, misrepresentation or mistake in a material regard was employed or occurred in order that such license should be conferred. The county clerk shall preserve such affidavit in a bound volume and shall issue to every licentiate duly registering and making such affidavit, a certificate of registration in his county, which shall include a transcript of the registration. Such transcript and the license may be offered as presumptive evidence in all courts of the facts stated therein. The county clerk's fee for taking such registration and affidavit and issuing such certificate, shall be one dollar. A practising dentist having registered a lawful authority to practise dentistry in one county of the state and removing such practise or part thereof to another county, or regularly engaging in practise or opening an office in another county, shall show or send by registered mail to the clerk of such other county his certificate of registration. If such certificate clearly shows that the original registration was of an authority issued under seal by the regents, or if the certificate itself is indorsed by the regents as entitled to registration, the clerk shall thereupon register the applicant in the later county, on receipt of a fee of 25 cents, and shall stamp or indorse on such certificate, the date and his name, preceded by the words, "registered also in   county," and return thecertificate to the applicant.

Examination fees. Every applicant for license to practise dentistry shall pay a fee of not more than $25. From the fees provided by this article the regents may pay all proper expenses incurred by them under its provisions, and any surplus at the end of any academic year shall be paid to the society nominating the examiners to defray its expenses incurred under the law.

Revocation of licenses. If any practitioner of dentistry be charged under oath before the board with unprofessional or immoral conduct, or with gross ignorance, or inefficiency in his profession, they shall notify him to appear before them at an appointed time and place, with counsel, if he so desires, to answer said charges, furnishing to him a copy thereof. Upon the report of the board that the accused has been gnilty of unprofessional or immoral conduct, or that he is grossly ignorant or inefficient in his profession, the regents may suspend the person so charged from the practice of dentistry for a limited season, or may revoke his license. Upon the revocation of any license, the fact shall be noted upon the records of the regents and the license shall be marked as canceled, of the date of its revocation. Upon presentation of a certificate of such cancellation to the clerk of any county wherein the licentiate may be registered, said clerk shall note the date of the cancellation on the register of dentists and cancel the registration. A conviction of felony shall forfeit a licence to practise dentistry, and upon presentation to the regents or a county clerk of a certified copy of a court record showing that a practitioner of dentistry has been convicted of felony, that fact shall be noted on the record of license and clerk's register, and the license and registration shall be marked canceled. Any person who, after conviction of a felony shall practice dentistry in this state, shall be subject to all the penalties prescribed for the unlicensed practice of dentistry, providing that if such conviction be subsequently reversed upon appeal and the accused acquitted or discharged, his license shall become again operative from the date of such acquittal or discharge.

§ 163 CONSTRUCTION OF THIS ARTICLE. This article shall not be construed to prohibit an unlicensed person from performing merely mechanical work upon inert matter in a dental office or laboratory, or the student of a licentiate from assisting his preceptor in dental operations while in the presence and under the personal supervision of the instructor, or a duly licensed physician from treating diseases of the mouth or performing operations in oral surgery. But nothing in the provisions of this article shall be construed to permit the performance of dental operations by any unlicensed person under cover of the name of a registered practitioner. Any student of dentistry whose certificate of study under private preceptorship shall have been duly filed with the secretary of the State Dental Society at the time this act takes effect pursuant to the provisions of law then in force, may present himself for examination to the board under the same conditions as those under which he might have presented himself for examination before the censors of the State Dental Society under the laws in force when his certificate was filed; providing, however, that he shall file a notice with the regents on or before the first day of September, 1895, that he purposes availing himself of this exemption.

§ 164. PENALTIES. (*a*) A person who, in any county of this state, practices or holds himself out to the public as practising dentistry, not being at the time of said practice or holding out a dentist licensed to practice as such in this state and registered in the office of the clerk of such county pursuant to the general laws regulating the practice of dentistry, is guilty of a misdemeanor, and punishable upon conviction of a first offense by a fine of not less than $50, and upon conviction of a subsequent offense by a fine of not less than $100, or by inprisonment for not less than two months, or by both such fine and imprisonment. Any violation of this section by a person theretofore convicted under the then existing laws of this state of practising dentistry without a license or registration shall be included in the term a subsequent offense.

(*b*) A person shall be deemed guilty of a misdemeanor, and upon every conviction thereof shall be punished by a fine of not less than $500 or by imprisonment for not less than six months, or by both fine and imprisonment, who

(1) Shall sell or barter or offer to sell or barter any diploma or document conferring or purporting to confer any dental degree or any certificate or transcript made or purporting to be made pursuant to the laws regulating the license and registration of dentists; or,

(2) Shall purchase or procure by barter any such diploma, certificate or transcript with intent that the same shall be used as evidence of the holder's qualifications to practice dentistry. or in fraud of the laws regulating such practice; or,

(3) Shall, with fraudulent intent, alter in a material regard any such diploma, certificate or transcript; or,

(4) Shall use or attempt to use any such diploma, certificate or transcript which has been purchased, fraudulently issued, counterfeited or materially altered, either as a license or color of license to practice dentistry, or in order to procure registration as a dentist; or,

(5) Shall practice dentistry under a false or assumed name; or,

(6) Shall assume the degree of bachelor of dental surgery, doctor of dental surgery, or master of dental surgery, or shall append the letters B. D. S., D. D. S., M. D. S. to his name, not having had duly conferred upon him by diploma from some college, school, or board of examiners legally empowered to confer the same, the right to assume said titles; or shall assume any title, or append any letters to his name with the intent to represent falsely that he has received a medical or dental degree or license.

(*c*) Any person who in any affidavit or examination required of an applicant for examination, license or registration under the laws regulating the practice of dentistry shall make wilfully a false statement in a material regard, shall be guilty of perjury, and punishable upon conviction thereof by imprisonment not exceeding 10 years.

(*d*) All fines, penalties or forfeitures imposed or collected for violations of the foregoing provisions relating to dental practice and the corresponding sections of the penal code must be paid to the State Dental Society. Said society may prefer a complaint for violation of the law regulating the practice of dentistry before any court, tribunal or magistrate having jurisdiction, and may, by its officers, counsel and agents aid in presenting the law and facts before such court, tribunal or magistrate in any proceedings taken.

§ 2. LAWS REPEALED. Of the laws enumerated in the schedule hereto annexed, that portion specified in the last column is repealed, but it is expressly provided that any license or registration duly obtained in this state prior to the first day of August, 1895, without fraud, and in full compliance with provisions of the laws in force at the time of its procurement shall not be affected by the repeal of those laws, but shall continue to be as valid as it was at the time of its procurement.

SCHEDULE OF LAWS REPEALED.

Laws of	*Chapter*	*Sections*
1868	152	All of section seven after, and including the words "whose duty it shall be," and all of sections eight, nine and ten.
1870	331	All
1879	540	All
1881	376	All
1889	337	All
1892	528	All

UNIVERSITY OF THE STATE OF NEW YORK.

EXAMINATION DEPARTMENT.

THIRD DENTAL EXAMINATION.

FOR ADMISSION TO PRACTICE.

ANATOMY AND HISTOLOGY.

Held Tuesday, September 24, 1895, 9.15 A. M. to 12.15 P. M.

Answer any 10 of the questions on this paper, but *no more*. Check the number of each one of the questions you have answered.

1 Name the bones of the cranium and of the face.
2 Describe the antrum of Highmore.
3 What is a *tooth germ*?
4 Describe Nasmyth's membrane.
5 What are the muscles of mastication?
6 What is *cementum*?
7 Give the origin and insertion of masseter and temporal muscles.
8 Give the origin and insertion of pcterygoid muscles.
9 Describe the salivary glands.
10 Give the origin and distribution of the fifth pair of nerves.
11 What are the branches of the external carotid artery?
12 Describe the pulp and give its function.
13 What are *odontoblasts*? *osteoblasts*?
14 Give analysis of dentine and enamel.
15 What would be the result of exposing dentine to the action of a strong acid for several days?

PHYSIOLOGY AND HYGIENE.

Held Tuesday, September 24, 1895, 1.15 to 4.15 P. M.

1 Define *physiology* and *hygiene*.
2 What is a cell? Of what is a cell composed and what is its function?
3 What is *organic tissue*? *inorganic tissue*? Give an example of each.
4 How are bone and dentine formed?
5 What is the function of dental periosteum?
6 How does blood circulate through the heart?
7 What is the normal pulse at the age of one year? 10 years? 50 years?
8 How does blood coagulate?
9 What is the function of the nervous system?
10 Describe the process of digestion and name the digestive fluids.
11 What changes in the air are caused by respiration?

12 Describe nerve fibre.

13 Does regular physical exercise affect the condition of the mouth? If so, how?

14 What is the best method of disinfecting instruments?

15 Give formula for an antiseptic mouth wash.

CHEMISTRY AND METALLURGY.

Held Wednesday, September 25, 1895, 9.15 A. M. to 12.15 P. M.

1 What is chemistry?

2 Define *chemical affinity*.

3 How should all matter be classified?

4 How many single elements are there?

5 What is the atomic weight of an element?

6 What is the difference between an atom and a molecule?

7 What is *specific gravity*?

8 Name *five* elements and give the symbol and the atomic weight of each.

9 Give a common method for the preparation of oxygen.

10 What is $H^2\ O^2$?

11 Name *three* disinfectants.

12 Name *three* antiseptics.

13 How does hydrogen exist in water?

14 Give the symbol and the atomic weight of hydrogen.

15 What is the difference between analysis and synthesis?

ORAL SURGERY AND PATHOLOGY.

Held Wednesday, September 25, 1895, 1.15 P. M. to 4.15 P. M.

1 What is *suppuration*?

2 Differentiate between septicemia and pyemia.

3 Name the classes of micro-organisms.

4 Define *necrosis* and give treatment.

5 Give the etiology, pathology and treatment of the various forms of ulcers occurring in the mouth.

6 Give the diagnosis and treatment of tetanus.

7 Name *three* tumors of the superior maxilla and give the pathology of one.

8 Give varieties of fracture of the inferior maxilla.

9 Give the treatment for a simple fracture ot the inferior maxilla.

10 Describe the various bandages used for injuries of the head.

11 Describe operation for ligating the facial artery.

12 What is an abscess?

13 What is anesthesia?

14 Give the method of administering anesthetics and state necessary precautions to be taken.

15. Define *synovitis*. Give symptoms and treatment.

OPERATIVE DENTISTRY.

Held Thursday, September 26, 1895, 9.15 A. M. to 12.15 P. M.

1 Give the causes and general treatment of dental caries.
2 What advantage has gold over other materials used for fillings?
3 In what class of cavities is amalgam a proper filling?
4 What advantages has gutta percha as a filling material?
5 How should a cavity be prepared for a gold filling?
6 Give method of preparing a cavity for a tin filling.
7 Give method of treatment for a freshly exposed, healthy pulp.
8 What causes the deposit over an exposed pulp?
9 Is the deposit of secondary dentine physiologic or pathologic?
10 Give method of devitalizing and removing dental pulps.
11 Give methods of treating and filling pulp canals.
12 Give treatment in case of alveolar abscess with fistula, acute and chronic.
13 Give treatment in case of pulpitis.
14 Give treatment in case of pericementitis.
15 What is erosion? Give its cause and treatment.

PROSTHETIC DENTISTRY.

Held Thursday, September 26, 1895, 1.15 P. M. to 4.15 P. M.

1 What is a *metallic* die?
2 Give the fusing-point of gold.
3 Describe your method of crowning the root of a superior central incisor.
4 What carat solder is obtained by fusing together ten parts gold, three parts copper and two parts silver?
5 Can you solder an 18-carat plate with 20-carat solder? Explain.
6 What is the substance known as vulcanite?
7 Name materials used in taking impressions of the mouth and state advantages of each.
8 Give the method of setting a Bonwill crown.
9 Explain what is meant by biscuiting.
10 When should *plain* and when should *gum* teeth be used?
11 Why should platinum instead of gold be used in continuous gum work?
12 Give the fusing-point of silver.

13 How do you repair a broken plaster cast ?

14 Give your method of finishing vulcanite plate.

15 Describe the method of fitting a gold crown to a bicuspid root.

THERAPEUTICS AND MATERIA MEDICA.

Held Friday, September 27, 1895, 9.15 A. M. to 12.15 P. M.

1 What is an *anesthetic*?

2 Name the principal general anesthetics, and the caution to be observed in their use.

3 Name three local anesthetics in use in dentistry, and state the conditions which call for their application.

4 What is an *astringent*? Name three astringents used in dentistry, and state the manner of their action.

5 Distinguish between a disinfectant and an antiseptic.

6 Name three disinfectants, giving the mode of their application, and the precautions, if any, to be observed in their use.

7 What desirable qualities should a disinfectant possess for use in a pulp canal?

8 Name four antiseptics, giving the mode of their application, and the precautions, if any, to be observed in their use.

9 What is a *stimulant*? Name three stimulants and state what condition of the gum calls for their local use.

10 What is a *sedative*?

11 Name three general sedatives, giving the mode of their action.

12 What conditions chiefly indicate the usefulness of the sedatives named in answer to question 11 ?

13 What conditions about the mouth would call for the use of iodine, and what are its effects?

14 What conditions about the mouth would call for the use of carbolic acid, and what are its effects?

15 Name the ingredients of a desirable dentifrice, and specify the properties which make each ingredient valuable for this purpose.

FOURTH DENTAL EXAMINATION.

For Admission to Practice.

ANATOMY AND HISTOLOGY.

Held Tuesday, January 28, 1896, 9.15 A. M. to 12.15 P. M.

Answer any 10 of the questions on this paper, *but no more*. Check the number of each one of the questions you have answered.

1 Describe the inferior maxillary bone.

2 Describe the tempero-maxillary articulation.

3 Name the muscles that depress the lower jaw.

4 Name the muscles of the tongue. Give the origin and insertion of *two* of these muscles.

5 What are the branches of the facial artery?

6 Describe the inferior maxillary nerve and give its branches.

7 Name the tissues that compose the body.

8 What is a *cell*?

9 What are *interglobular spaces*?

10 What is *dentine* and how is it formed?

11 What is *enamel* and how is it formed?

12 Describe peridental membrane and give its functions.

13 Where does calcification of a tooth begin?

14 What is *protoplasm*?

15 What are *lacunae* and how are they formed?

PHYSIOLOGY AND HYGIENE.

Held Tuesday, January 28, 1896, 1.15 P. M. to 4.15 P. M.

1 What is the function of the blood?

2 Where and how is the blood changed from arterial to venous? from venous to arterial?

3 Describe the red and the white blood corpuscles, giving the peculiar characteristics of each.

4 Name the excretory organs.

5 What is the composition of bone?

6 Give a general description of the two nervous systems with the functions of each.

7 Name *five* of the principal elements of the body.

8 Describe organic and inorganic tissues. Give examples of each.

9 Define *function*.

10 Will filling deciduous teeth interfere with the physiologic absorption of their roots? Explain.

11 To what class of tissues do the teeth belong?

12 At what period of life is the development of teeth first indicated?

13 What is the function of saliva?

14 Give the source of animal heat.

15 Define *calcification*.

CHEMISTRY AND METALLURGY.

Held Wednesday, January 28, 1896, 9.15 A. M. to 12.15 P. M.

1 Name *three* metals and give the symbol and the atomic weight of each.

2 What is *ozone*? Name some of its properties.

3 Name the constituent elements and the properties of the atmosphere.

4 How is aluminum obtained? Give its symbol and its atomic weight.
5 Give process of refining gold by chemicals.
6 Name *three* acids used in medicine. Give the formula for each.
7 What are *alkaloids*? Name *three* alkaloids.
8 By what principle do elements combine to form compounds?
9 What is the compound of oxygen and another element called?
10 What influence has temperature on a mixture of oxygen and hydrogen?
11 What is a *chemical equation*?
12 What is the source of tartaric acid? Give its use in medicine.
13 How is molecular weight obtained?
14 What is meant by *chemical reaction*? Give an example.
15 How are gold and platinum separated?

ORAL SURGERY AND PATHOLOGY.

Held Wednesday, January 29, 1896, 1.15 P. M. to 4.15 P. M.

1 What is an *ulcer*? Give the etiology and treatment.

2 What is *gangrene*? Name the varieties of gangrene and give the treatment of *one* variety.

3 Give the treatment of fracture of superior maxilla. What complications may arise?

4 What is a *dislocation*? Name the varieties and give the causes.

5 What is an *incised wound?* Give the prognosis and treatment.

6 What precautions should be taken in extracting molars and bicuspids of the inferior maxilla?

7 How should hemorrhage following extraction be arrested?
8 What is *exostosis*? Give its microscopic appearance.
9 Give the pathology and treatment of epithelioma.
10 Describe ranula and give the treatment.
11 Give the etiology, symptoms and treatment of mercurial stomatitis.
12 What is the difference between a ptomain and a toxin?
13 Describe the operation of ligating the temporal artery.
14 Give the treatment of mercurial necrosis.
15 Give the pathology and treatment of dermoid cyst.

OPERATIVE DENTISTRY.

Held Thursday, January 30, 1896, 9.15 A. M to 12.15 P. M.

1 What advantage has amalgam over gold for filling teeth?
2 How should an amalgam filling in a compound cavity involving the approximal and masticating surfaces of a molar tooth be inserted?

3 Give method of treating and filling a buccal cavity that extends beneath the alveolar border, with adjacent soft tissues congested and bleeding.
4 How is a cohesive gold filling made ?
5 How is a soft gold filling inserted ?
6 Give method of treating and filling a deep cavity when the tooth is sensitive to either heat or cold.
7 Give method of treating and filling a very sensitive, superficial cavity with gold.
8 What are the comparative merits of hand and mallet pressure ?
9 Give the process of bleaching dentine that is discolored by death of pulp.
10 Give method of removing pulps that have not been devitalized.
11 What practical application of electricity has been made in operative dentistry ?
12 Give the diagnosis and treatment of irritation arising from pulp nodules.
13 Give the treatment in case of pulp exposure, attended with pain, in deciduous teeth.
14 How should deciduous teeth be treated and filled ?
15 Give method of treating and filling approximate cavities in permanent teeth of children, when these teeth are deficient in lime salts.

PROSTHETIC DENTISTRY.

Held Thursday, January 30, 1896, 1.15 P. M. to 4.15 P. M.

1 How are errors in the articulation of artifical teeth corrected ?
2 Give quick a method of replacing a single, plain tooth broken from a rubber plate.
3 What are the objections to celluloid as a base plate ?
4 Give the fusing point of zinc.
5 Give the composition of porcelain teeth.
6 State the degree of heat and the length of time required for obtaining the best results in vulcanizing.
7 Describe the shape, size and shade of teeth suitable for an elderly man of lymphatic temperament.
8 Describe the teeth suitable for a young woman of nervous temperament.
9 Describe a method of getting a correct bite.
10 Should the bearing be greater on the outer or on the inner cusps of artificial teeth ?
11 Describe a method of making a gold crown.
12 Give the formula for 14-carat solder.

13 Describe a method of accurately fitting a gold clasp to a tooth.
14 What causes an artificial denture to tilt in mastication?
15 Give a method of repairing a broken gold clasp on a rubber plate.

THERAPEUTICS AND MATERIA MEDICA.

Held Friday, January 31, 1896, 9.15 A. M. to 12.15 P. M.

1 What is meant by *idiosyncrasy*?

2 For what conditions in the mouth is sulphuric acid useful? In what strength and in what manner may it be employed?

3 In what manner may the teeth be best protected from the effects of acids administered internally through the mouth?
4 What is a *counter irritant*? Name *two* used in the mouth.
5 What is the dose of tincture of aconite root?
6 What is the local action of aconite?
7 What preparation of arsenic is most used in dentistry, and what is the local action of this preparation?
8 Name the drugs that may be combined with arsenic for devitalizing a tooth pulp, and state what purposes these drugs serve.
9 Name *three* local anesthetics used in dentistry, and state the conditions that call for their application.
10 What desirable qualities should a disinfectant possess for use in a pulp canal?
11 What is a *stimulant*? Name *three* stimulants and state what conditions of the gums call for their local use.
12 What conditions about the mouth call for the use of iodine, and what are its effects?
13 What conditions about the mouth call for the use of carbolic acid, and what are its effects?
14 How should any injurious results arising from the local action of arsenic on the gums be treated?
15 Name the ingredients of a desirable dentifrice, and specify the properties that make each of these ingredients desirable.

The examinations are held in September, January, April, May and June, simultaneously in New York, Albany, Syracuse and Buffalo. The questions are prepared by the State Dental Examining Board, each of the eight members having his own subject. They are transmitted to the Regents, who at the proper time place them in the hands of sworn examining agents, and they conduct the examinations. The answers are returned to the Regents, who transmit them separately to the several members who have prepared them, without the names of the candidates. They are read by numbers, marked and returned to the Regents, who thereupon issue licenses to practice to the successful ones. Thus the members of the Examining Board have no knowledge of the identity of those whom they examine, for they never come in personal contact with them, nor do even the regents know who they are until the sealed envelopes containing the names are finally opened for identification.—EDITOR.

THE DENTAL PRACTITIONER

AND ADVERTISER.

DR. W. C. BARRETT, ... EDITOR.

BUFFALO, N. Y., JULY, 1896.

SOME VEXED QUESTIONS.

There are two problems now prominently before the dentists of America upon which opinions widely differ, both of which are pressing for a solution. They are the etiology of that condition most frequently but somewhat vaguely denominated pyorrhœa alveolaris, and the physical characteristics of amalgams. The one is pathological, the other mechanical. Both questions are in that ambiguous, undetermined state, in which that of the etiology of dental caries had always been before the date of Miller's convincing experiments. There are widely varying results reached by different experimenters and generalizers in both fields, and the most contradictory theories are confidently advanced. The most inconsistent and repugnant assertions are insisted upon as matters of fact, too many of them the results of either mere speculative reasoning or of insufficient, unscientific and unmethodical experimentation. It is an indication of the advance of erudition and of the spirit of scientific inquiry among us, that attention is so generally drawn toward these unsolved questions. The respectful, and even eager attention that has been given to the writings and studies of Prof. Peirce and others upon the origin of pyorrhœa, and to those of Prof. Black upon the physical characteristics of the teeth and the phenomena presented in the crystallization of amalgams, is very encouraging to the lovers of dentistry and of dental progress, and leads us confidently to hope for a future yet more fruitful than has been the past.

We do not believe that in either case has anything very near a complete explanation yet been reached, but it would seem as if we are nearer the end of the amalgam question than of the other, because the different factors can be more exactly demonstrated and weighed, as well as because a man admirably well adapted to its study is giving almost his exclusive attention to it. And yet Dr. Black so far has been baffled at almost every turn. We chance to have been somewhat favored with opportunities to know what he has been doing, and have been proportionally interested. It would seem to be an easy task to determine the physical character of certain simple alloys that have been amalgamated with mercury. Previous observers have believed that a few experiments should determine certain points, and they have commenced them only to be confounded by the conflicting results, and confused by the uncertainty attending them. So far it has been absolutely impossible exactly to determine upon what the expansion or shrinking of an amalgam depends, or to adopt methods that with precisely the same material will secure identical ends. We are all aware of the clinical uncertainties attending the use of amalgam, but few are aware of the fact that from the same alloys it is almost impossible for the same man, at different times, to insert into a metallic or other matrix two fillings that will be the same. This was beautifully illustrated at the late meeting of the Illinois State Dental Society.

A large number of gentlemen were there invited to insert experimental amalgam fillings, each to use any amalgam that he might choose. The results were astounding. There was no disputing the skill of many of the operators, and yet there was nothing like any uniformity of issue. In fact, they were so bad that it was deemed unwise to give them to the profession at all, and they will be withheld from publication. What were all the factors making this sum of the whole it is of course impossible to say, but undoubtedly some of them were unsuspected. Here is one instance.

A considerable number of the operators had for some time been using an alloy of high grade, made by an entirely reliable manufacturer, and naturally selected this. About a dozen fillings were made from some of the material expressly furnished for the experiments. They showed exceedingly bad results, quite different from those usually exhibited by the same alloy. The stubs of the ingots from which this alloy was cut were telegraphed for, and obtained. They were carefully filed up, and another lot of fillings made by the same men who made the others, when behold the results were totally unlike them, more closely resembling those usually presented by that alloy. Careful inquiry and examination developed the fact that the cutting tool had become heated when the first lot was prepared, and this had totally changed the character of the alloy by annealing it.

Dr. Black has conducted thousands of experiments with amalgams, and thinks that he is gradually evolving the laws that govern the phenomena exhibited by them. But he has been so often misled, has followed so many wrong leads, and has been so bitterly disappointed at times, that it is little wonder that he is extremely chary in pronouncing opinions until he shall feel that he has reached the end, and come to a definite, unmistakable conclusion. In this number we publish an article from him, written in answer to that veteran experimenter, Thomas Fletcher, of England, but in that he is careful about committing himself. He does not feel that he is yet warranted in speaking authoritatively on certain points.

And yet, the result of his failures might be very instructive to others, as they have been to us, so far as we are acquained with them. We trust we are not violating a confidence, for we cannot withhold some facts that have come to our knowledge, which illustrate the uncertainty of any experiments conducted and interpreted by men unskilled and untrained by years of such work.

In this connection it is proper to call attention to the importance of the microscopical examination of fillings inserted in unyielding matrices. Any one who has never made this test will be astonished at the results of it. Compared with it the staining test is very uncertain. It may be urged that it only shows the condition of the surface of the filling, but that is the critical point, for it is where imperfections in plastic fillings will most certainly reveal themselves. If the surface and superficial margins are perfect, there is little fear of the rest of the filling.

In a series of steel matrices, prepared with the most labored exactness by Dr. Black, experimental amalgam fillings were inserted by one entirely competent. Numbers 1, 2 and 3 were filled with the same alloy, cut from the same ingot, sifted and poured into one bottle. All were filled on the same day. No. 1 was filled with the alloy fresh cut. The expansion was such as to raise the filling sensibly above the steel matrix. No. 2 was filled after the alloy had been annealed at a temperature of 120° for five hours. In this there was practically a perfect result. The microscope revealed that there was a very minute amount of shrinkage. No. 3 was filled after the alloy had been subjected to the temperature of boiling water for ten minutes. In this the shrinkage was considerable, but not as much in degree as was the expansion in No. 1.

Numbers 4 and 5 were made from the same alloy, but different from that of Nos. 1, 2 and 3. No. 4 was made from the freshly cut alloy. The expansion was, as marked by the micrometer, 55 ten-thousandths of an inch. No. 5 was made after the alloy had been kept at 130° for 52 hours. The shrinkage of this filling was 3 ten-thousandths of an inch.

These observations indicate that the factor of temperature has much to do with the characteristics presented by an alloy. Annealing of the cut material at even comparatively low temperature may entirely change the results. In the above cited cases expansive alloys were made contractile. Even the heat engendered by the cutting tool may completely alter the alloy. Of course there is a wide variation in the sensitiveness of different preparations, but it would appear that all must respond to a greater or less degree.

These factors are some that have been, so far as we are aware, entirely neglected in the past. Professional opinion has been formulated upon other considerations. Clinical results that have been disappointing have been attributed to physical characteristics of the teeth, rather than to those of the filling materials. Faulty manipulation has no doubt often been charged with bad results for which it was not responsible, and altogether there is little doubt that wrong ideas as to amalgams have obtained a lodgment in the minds of most dentists. If this is so, it will be slow work to uproot them and to substitute new ones. Manufacturers, especially, must exercise greater care in the preparation of the alloys if Dr. Black is correct in his observations. All that has heretofore been deemed necessary was to melt together metals, often of unknown degrees of purity, according to a certain formula, and then to reduce them by the most convenient means, and without any special precautions, to filings or shavings. Dr. Black has found a marked difference in alloys which he obtained from the manufacturer already cut, and the same formula when received in the ingot and carefully cut by himself.

There are many series of observation and experiment that it would be very interesting and instructive to detail and consider, but it would be an injustice to the man who has conducted them, prematurely to present them to the public. It is his unquestioned privilege first to give them to the world, and no one has the right to anticipate him, and thus to detract from the interest of any communication that he himself may wish to make. Besides, as the results are yet indeterminate, and further study of the subject may quite modify or even reverse opinions now formed, it might be misleading if undigested deductions were given out. For these reasons we do not go into the matter further, but simply record the conviction that when Dr. Black himself speaks there will be something of interest to communicate.

So far the good results of the many and exhaustive experiments of Dr. Black establish the imperative necessity for the exercise of greater care in the manufacture and preparation of amalgams, as well as in their mixing and insertion as fillings. The various steps in his experimentation are full of interest, and the results have sometimes been almost unaccountable. A series of observations has, perhaps, completely reversed a decision previously reached, and made necessary the retracing of the whole path so laboriously traversed. We have watched the whole, so far as we have had knowledge and been able to do so, with constantly increasing interest, and there is little doubt that much has been accomplished, but the end has not been reached. Every dentist is or should be interested in the study, and whatever may be the outcome, Prof. Black is to be highly commended for the laborious zeal with which he has pursued it. He is undoubtedly right in withholding his opinion until he has reached the end of his experimentation, and of course is not to be held responsible for anything here expressed.

NEW YORK STATE PROFESSIONAL LEGISLATION.

No apology is demanded for taking up so much space in this number with the consideration of the practical working of the new regulations for dental practice in the State of New York. The departure from previous methods is so wide that we must for a time remain in the experimental stage. In all other states in which legislation has been secured, the administration of the law and the government of the profession has been vested in the dentists themselves, as they are organized under the statute. In this state the whole authority is placed in an independent bureau, that has jurisdiction, not only over dentistry, but over medicine, law, pharmacy, and all higher educational affairs.

The result of this will undoubtedly make the schools more effective, and will finally result in a higher status in all the professions, but it works hardship to dentistry in some respects, because our students are not usually as well educated as those who apply for admission to medicine and law. This is not to be wondered at, for we are much younger, and our calling does not possess the attractions for educated young men that older professions do. It would have been no injustice to anyone, had dentistry and pharmacy been allowed to continue for a very few years with a lower standard of qualification for matriculation than those demanded for theology, law, and medicine.

The principal danger in the present administration of professional affairs in this state, seems to lie in the building up of an irresponsible bureaucracy, governing educational affairs by a system that shall involve so much of form and red-tape as seriously to embarrass well-meaning and intelligent educators. The managing department is liable to assume bureaucratic ideas, and to sacrifice everything to system. It tends toward what Dickens so mercilessly satirized in the English government under the name of the Circumlocution Office. There is already considerable chafing under the restraints placed upon a specialty that has always governed itself, and upon the whole in rather a wholesome manner. Perhaps in time matters will easily adjust themselves, but in the interim there cannot be too much of publicity given to the practical workings of the law, and hence the report of the correspondent of the Seventh District Dental Society, embodying the opinions of different educators upon the practicability of our law, is published in full.

One thing is certain; a halt should be called to further aggressive legislation. The power of the bureau is already quite sufficient to work any needed reforms, and any further assumption of authority will be likely to produce a reaction. The present legislation should not be too rigidly enforced, but some latitude in interpretation should be allowed, that the transition may be gradually brought about, and opportunity given for dentistry especially, to adapt itself to the altered conditions. A careful study of the amendments passed last winter will show that the lines are being strengthened and made more tense, and that the consequence will be unnecessary hardships to both colleges and graduates. Both should have time to fit their backs to the added burthens.

Especially should consideration be shown to students who commenced their course of study under definite rules, which seem almost every day to be made more stringent. New regulations are promulgated so frequently that it is impossible for teachers to keep thoroughly posted concerning them, while students frequently come in contact with Regents' regulations of which they knew nothing, and for whose enforcement they were not responsible. The graduating class of the New York College of Dentistry, for instance, at this present writing are without the diplomas which they have fairly earned, because of a lack of harmony between the Faculty and the Regents. This is an especial hardship to them, and they should not be made to suffer for things which are entirely the fault of others. These troubles will not promote the cause of a better professional education, and they give too much of reason for the impression in the minds of students that we are under a bureaucratic form of government.

The lists of questions issued by the Regents for the third and fourth examinations for practice are published in this number. These are prepared by the State Board of Dental Examiners, and are, upon the whole, quite satisfactory. Yet a careful study of them will show that some of the examiners apparently entertain the idea that it is their business to hold up the candidates in any case. Some of the questions are asked from the standpoint of experience, and that is precisely what a student has not. Some of the board are evidently unacquainted with the curriculum of the schools, and their queries are reflections of special methods of practice that may possibly be peculiar to the examiners. Every member of an Examining Board should keep himself thoroughly familiar with the course of college study, and to this end it is incumbent upon him frequently to visit the schools, for systems of teaching as well as methods of practice are undergoing constant changes and improvements. No student should be required to know that which is not in the curriculum of the college from which he graduated. If the teaching has been incorrect or insufficient, the college should be held responsible and punished, and not the students.

The young graduate is supposed to be versed in theory only. Practical experience can only be gained after graduation. During the whole college course he is under the direction of his teachers, and simply follows their directions. Independent judgment and action can only be acquired when he is removed from their guidance. One can learn the whole theory of swimming in the class room, but the ability to float easily, the confidence that will enable one to save life, must be obtained in deep water. The examination of a State Board should be directed toward ascertaining if the candidate has mastered the underlying principles that will enable him to practice successfully, and if he has the necessary knowledge of technics to fit him for manipulative work.

The examiner should never forget that there are widely differing opinions upon many methods of practice, and he should not insist that the answers coincide with his own impressions, but simply that the student have intelligent ideas upon the subject. The examiner may believe that he is wrong, but he has no right to mark him deficient when he gives intelligent answers. The questions should invariably be clear in diction, so that there shall be no possibility of misunderstanding them. Some of those asked are not thus expressed. For instance, in both examinations it is demanded that the difference between organic and inorganic tissues be given. That is absurd. There can be no such thing as inorganic tissue, because all kinds must be the product of function or growth, and that always and necessarily produces organic matter. To speak of inorganic tissues, then, is a complete contradiction of terms. There are organic elements of inorganic origin, but all tissue is the result of organic action, or function.

Another question demands the classes of micro-organisms. This is altogether too indefinite, because there are almost as many methods of classification as there are teachers of bacteriology. Another asks, in what class of cavities is it proper to use an amalgam filling. This examiner evidently has some special "fad" of his own, because the best authorities in dentistry very widely differ in this matter, some insisting that amalgam is proper in no cavities, while others would confine it to back teeth, and yet others to children's teeth; not a few would base its propriety upon the structure of the tooth, while others believe this to be entirely an imaginary distinction.

The treatment of different good operators in pulpitis, or perecementitis, is widely variant, yet each may be intelligent. It is asked in one place if an 18-carat plate can be soldered with a 20-carat solder, and the natural answer is that it cannot; and yet it all depends upon what alloy is used in each, for it is, of course, quite possible to solder a plate of low grade that has been alloyed with platinum, with a solder that is of higher grade, if only some low fusing alloy has been used.

The candidates have been asked, what is protoplasm. Who can tell? Not even the most accomplished biologist. It is a term that is applied to indeterminate substances. The difference between a ptomaine and a toxine requires a degree of technical knowledge that is seldom possessed by chemists, even supposing that there is in all cases a distinct line between the two. The complete description of the fifth pair of nerves would require an amount of writing that would take up nearly the whole of the time for one examination. That question is too comprehensive. It should be enough to give a description of some special branch, for that could not be comprehended and given without a knowledge of the whole. The man who asks what should be the relative bearing upon the outer or inner cusps of artificial teeth, evidently has some special ideas of his own, which he demands that every student should know and approve.

But one might almost endlessly criticise almost any list of questions. We only desire to point out the necessity for the greatest care and the broadest conception in formulating a series of questions to be propounded to students taught by many different teachers. Upon the whole, the list published is not a bad one, and we have seen more than one that was worse. It is quite proper to indicate points in which it might perhaps be improved, for certainly all desire to secure the best possible results.

DENTISTRY AND MEDICINE.

We are under obligations to Dr. R. Finley Hunt, D. D. S., for a copy of his paper, entitled, "Dentistry a Distinct and Independent Profession: A position based upon undeniable Historical and Current Facts, and not upon Theories supported by Arguments." The paper was read before, unanimously adopted, and ordered printed, by the Washington City Dental Society. We cannot but take issue with the author, because we think that it shows a tendency in the wrong direction, and because to our apprehension it involves a misapplication of terms. Had he claimed that dentistry was a distinct *art*, or *trade*, there could have been no cavil. But to demand its recognition as a *profession*, and then to deny its special relation to either one of the only three distinct professions in existence, does not seem to us consistent. There are but three independent "professions," and they are law, theology and medicine. The world recognizes no others, and will recognize none. Painting, sculpture and music are not recognized as "professions," although there are separate degrees conferred upon them by the great universities of the world. An avocation is not a "profession," it matters not how high may be its status. If dentistry is not the practice of medicine in some of its forms, it is as absurd to call it a "profession" as it would be to speak of the "profession" of shoemaking or blacksmithing. It does not matter that it ranks in human estimation as higher in status. That has nothing to do with the question. It cannot be a profession unless it comes within the class that is universally recognized as among the professions, and as we have already stated, there are but three of these. They derive their right to be so considered from the time of the feudal ages, when the feudal lord was bound in return for feudal service to give religious consolation, care for the body in sickness, and look after the social rights of his vassals. If dentistry is a "profession" at all, it must derive its right to be so considered from one of these sources. Otherwise, like music and painting, it is but an art or avocation.

Gynecology, dermatology and ophthalmology are not "professions." There can be no separate "profession" of surgery. It derives its title from medicine, for a surgeon must be first a medical man, or he is nothing more than a pretender. The chiropodist must study the anatomy of the foot, but if he does no more he is not a professional man in any sense. But if he goes through the field of medicine, and thus become a member of the profession of medicine, he may confine himself to that specialty and be universally recognized as a professional man.

The dentist has precisely the same standing. If his dentistry consists of the practice of the mechanic arts alone, he is no more a professional man than a blacksmith or a goldsmith. But if he practices any part of the healing art, that is medicine, and he must practice it as a part of medicine. He may even do this without being a medical man, or belonging to the profession of medicine.

It therefore depends largely upon what kind of dentistry a man does, as to whether or not he is practising any part of medicine. It is the merest absurdity to claim that a college education is necessary for a man to follow a mechanic art. So those who deny that dentistry, when properly practiced, has any affiliation with medicine, must decry our colleges, for they are at once reduced to the level of schools of technique, and all "professional" recognition must be denied them. We cannot but believe that this has a debasing tendehcy.

ARTIFICIAL DENTURES.

Young practitioners in dentistry are always exceedingly anxious concerning the fit or adaptation of their first artificial dentures, and when they do not prove to be satisfactory and are too easily displaced in practical use, the failure is ascribed to a lack of adaptation, another impression is taken and the plates remade. We have in previous numbers of this journal called attention to the great probability that the lack of success in many cases is due to mal-occlusion, rather than to a poor fit. An upper plate is inserted in a mouth in which there are but the anterior lower teeth. No special provisions are made to secure a direct occlusion, but the natural lower teeth are made to close against the lingual side of the artificial teeth, or the sloping surface of the plate. Of course such an inclined plane must force the denture forward until adhesion is lost, when it falls in the mouth.

If there are natural bicuspids and molars below, the artificial teeth may be so adjusted that they slide upon some projecting point, or the inclined surface of a natural tooth, and any force that is then used in mastication has the natural tendency to drive the denture out of its place, either posteriorly or anteriorly. Perhaps there is an inclined plane upon both sides, and the plate with a direct adhesive force of five or six pounds, is expected to retain its place against an oblique energy of thirty or forty pounds.

Every dentist knows that in the natural denture no tooth falls into line exactly opposite another, but rather "breaks joints" with it, the first lower pre-molar shutting between the upper cuspid and the first upper pre-molar, this arrangement being preserved throughout. Each tooth in that case is prevented from sliding upon its antagonist, and is firmly held without effort. If cuspids or pre-molars were to occlude point to point, there would not be force enough in the jaws to prevent them from sliding either one way or the other. Therefore, in arranging artificial teeth, especial care should be taken to see that there are no inclined planes of occlusion, or if one is found to be unavoidable, another in the opposite direction should be arranged to counteract it.

An artificial tooth should never be arranged to bite directly upon another. That is, their vertical axes should never be in line. Perfect occlusion is impossible when this is the case, and their occluding surfaces must either be ground down flat, or they will slide forward or backward. Each tooth must bite upon two opposite ones. The cusps are so fashioned that they naturally fall into place between the opposite teeth, and thus interlock in a manner that prevents sliding when they are in contact.

Sometimes it is difficult to arrange this when artificial teeth occlude with natural ones, but it can always be secured either by changing the arch of the artificial teeth, by leaving a space between them, or by carrying the centre a little to one side. Of course, when gum section teeth are used, the spaces between them cannot be changed at will, and that is why good mastication cannot be as well secured with them as with single plain teeth. But the arch or centre can be so changed as to make occlusion comparatively good.

Another reason why artificial dentures are sometimes failures, is that the parts representing the alveolus present to the muscles a convex instead of a plain or concave surface. When the lip must fall over a rounded contour, the natural tendency of both the longitudinal and transverse fibres of the orbicularis oris muscle and those of the others which blend with it, is to force the plate down. Let the surface of the plate that is under the lip be flat, the upper border not being filed or ground down to a knife edge.

The same rule should be followed in shaping the surfaces against which the lateral borders of the tongue rest. They should even be concave, that the tongue may lie easily in the space, and assist in holding the denture in place. Much of the difficulty in speaking that sometimes follows the insertion of artificial teeth, is due to the unnecessary thickness of the plate at the points representing the lingual alveolus over the roots of the pre-molars and molars. In making rubber plates, too much material is used where it is not needed for strength, and the plate is thus rendered heavy, clumsy, inartistic, and difficult of retention.

Many dentists, especially those who are young in practice, wax their rubber cases too far toward the points of plain teeth. Those that are just about long enough to reach to the alveolar ridge should be selected, and then upon their labial aspect they should be waxed only high enough barely to engage their external base. It is much easier to finish them, they look far more artistic, and they are lighter. The incisive and canine fossæ should be well marked, to afford a proper lodging place for the decussating fibres of the buccinator, and for the longitudinal fibres of the levator muscles. The margin in these regions must be cut down, while the canine eminence is marked by carrying it higher in that locality. When these rules are observed the plate will not only be more artistic in appearance, but it will be retained in position much more easily.

FREEDOM OF DEBATE.

Some people are shocked if certain pet dogmas or hypotheses are called in question. They declare that they are too sacred for criticism. They applaud when what they believe to be wrong meets with condemnation, but that which others may deem error, if only it is their dogma, must be held sacred.

That would mean the end of all progress, for there is scarce an idea, however absurd, that some one has not adopted as a part of his professional or religious creed. There can be no advance except through the critical examination of accepted theories. There is no religious dogma that is above examination. A refusal to consider means a fear of the stability and correctness of a postulate. If the dearest belief that we entertain is untrue, we need to know it, and to progress toward something better. An outcry against examination means a protest against truth, against science, against human progress. But candid research and examination does not mean unreasoning cavil and captious sophistical censure, any more than freedom of speech implies license for malicious libels. Honest scrutiny is always to be invited, for every subject. Malignant animadversions are never justifiable.

CURRENT NEWS AND EXCERPTS.

COMMENCEMENT EXERCISES.

The fourth annual commencement exercises of the Dental Department of the University of Buffalo were held in connection with those of medicine and pharmacy, in Music Hall, City of Buffalo, on the evening of May 6, 1896. The examination before the Board of Curators was held during the day, when the members of the class were subjected to an exhaustive oral examination in the different branches of the course of study, and their operative and prosthetic work was passed upon. The number of matriculants for the session was 186. The number of members of the senior class was 38. The degree of Doctor of Dental Surgery was conferred by the Chancellor upon the following 36 candidates, who were found qualified:

Bean, Charles Arthur,	Buffalo, N. Y.
Bridgman, Edward W.,	Buffalo, N. Y.
Buell, Charles King,	North Parma, N. Y.
Bunting, Sidney W.,	St. Catharines, Ont.
Cameron, John H.,	Caledonia, N. Y.
Clapp, Victor Albert,	Cohocton, N. Y.
Comstock, Edmund T.,	Tonawanda, N. Y.
Cutler, Horace S.,	Honeoye Falls, N. Y.
Decker, Charles S.,	Binghamton, N. Y.
Dickson, William B.,	Kirkwall, Ont.
Eaton, Carl S.,	Kendall Mills, N. Y.
Featherstone, Charles E.,	Drumquin, Ont.
Gibson, Thomas G.,	Galt, Ont.
Gillam, James H.,	St. Catharines, Ont.
Harlan, Ralfe M.,	San Francisco, Cal.
Kidder, Arthur,	Owego, N. Y.
Lugsdin, Frank G.,	Toronto, Ont.
Lyle, Herbert J.,	Morrisburg, Ont.
Martin, Eugene L.,	Bouckville, Ont.
Mills, Emmet E.,	Wellsboro, Pa.
Müller, Wilhelm,	Frankfort-am-Main, Germany.
Parish, Wesley A.,	Avon, N. Y.
Quedenfeldt, Paul, B. H.,	Schweidnitz, Germany.
Rainie, James M.,	Buffalo, N. Y.
Redway, Richard B.,	Ilion, N. Y.
Sanford, Lewis P.,	Penn Yan, N. Y.
Squire, Henry F.,	Lisle, N. Y.
Stadlinger, Peter A.,	Buffalo, N. Y.
Starkweather, Carl S.,	Springville, N. Y.
Stevenson, Walter S.,	Mooers, N. Y.
Stewart, Charles A.,	Mooers, N. Y.
Van Valkenburgh, Jay G.,	Canastota, N. Y.
Warren, Henry D.,	Buffalo, N. Y.
Webb, Harry C.,	Syracuse, N. Y.
Woodworth, Earl J.,	New York City.
Young, Douglas H.,	Andover, N. Y.

CONTAGIOUS DISEASES.

A Michigan State Law provides that there shall be taught each year in every public school in the State the principal modes by which communicable diseases are spread, and the best methods for the restriction and prevention of such diseases. The following are extracts from the instructions given:

Consumption is now known to be a communicable disease. It is spread by the dust of dried sputa, and also by milk and meat of tuberculous animals. The most important measure for the restriction of consumption is the disinfection or destruction of all sputa of every consumptive person.

Pneumonia is spread by a germ which is in the sputum of those who have the disease (and of some who do not have the disease, unless, possibly, after exposure to the inhalation of cold air). Care should always be taken to destroy or disinfect all sputa of those who have pneumonia.

Influenza is now believed to be spread by a germ which finds its way from infected handkerchiefs and other articles and places into the nose, throat, air-passages of persons susceptible to this disease. The measures for its restriction are therefore obvious—isolation and disinfection.

Diphtheria is spread by the sputa, saliva, and whatever comes from the throat and mouth of the patient, and by the dust which results from the drying of such saliva, etc. The germs of diphtheria sometimes remain in the throat weeks after apparent complete recovery. For its restriction and prevention, isolation and disinfection are the important measures—isolation of every infected person and thing, and their complete disinfection.

Typhoid Fever.—Unlike typhus fever, tyhoid fever is not often contracted directly from the sick person, but usually from the discharges from the bowels of the sick person. These should always be properly disinfected. Undisinfected discharges, if dried and formed into dust, may spread the disease through the air. The chief source of danger, however, is believed to be drinking-water contaminated by sewage or leachings from privies, etc. The germs of typhoid fever are killed by boiling. All suspected water should be boiled.

Scarlet Fever.—The germ of scarlet ferver is not yet identified. But that there is a germ seems to be proved by the well-known communicability of the disease from person to person. It is spread by the discharges from the nose, mouth, and throat, and probably also by the minute scales which are thrown off from the surfaces of the body. Isolation and disinfection are the measures by which this disease is restricted.

Measles is spread from person to person, directly and indirectly. Isolation and disinfection should be enforced.

Whooping-Cough is a communicable disease which causes more deaths than does small-pox. Whooping-cough is spread from person to person, directly and probably indirectly. Most of the following "General Directions," except perhaps those for disinfection of the discharges from the kidneys and bowels, are applicable for its restriction.

Small-pox.—Small-pox is a contagious disease; it spreads by means of particles given off from the surfaces of the body. The following rules are applicable for the *restriction* of small-pox whenever the disease occurs, but by vaccination and revaccination small-pox may be and should be always wholly *prevented*. One vaccination or once having small-pox does not protect for life. Revaccination should be had in about five years, also whenever small-pox is prevalent and certainly immediately after one has been exposed to the disease.

Cholera is spread in much the same way as is typhoid fever. The same precautions recommended to prevent the spreading of typhoid fever should be taken as soon as cholera appears. The first evacuations of choleraic diarrhea are infectious, and should, as well as all that follow, be immediately carefully disinfected. Suspected drinking-water should be boiled.

A NEW COLLEGE BUILDING.

The Dental Department of the University of Buffalo has met with such success that it has entirely outgrown its surroundings. Three times in its brief history have its borders been enlarged, until it was not only occupying every inch of disposable room in the present university buildings, but another building in the neighborhood had for two years been used as an annex. The authorities recognized the absolute necessity for more space, and a fine new brick structure is now in process of erection, that will be finished in time for the opening of the fall term.

In some respects the plan of the new dental-department building is unique. It will be 70 x 80 feet in size, and three stories in height above the basement. There will be two commodious lecture rooms, one upon the ground floor, while, with the exception of the Freshman laboratory and its collateral rooms, and the museum, reception, and bicycle rooms, all the others will be grouped in a very convenient manner about the central amphitheatre, which reaches to the roof. There will be freshmen, junior and senior prosthetic laboratories, with plaster, metal, and demonstrator's rooms attached to each; a technic room, and chemical, histological, and pathological laboratories. The infirmary will have 120 feet of wall space, and will occupy 2,000 square feet of floor space. Altogether more than 25,000 square feet of space will be devoted to the teaching of dentistry in all its branches. The heating will be by indirect radiation from steam boilers, the heated air being forced into the tops of the rooms by an engine, and thus a thorough system of forced ventilation will be secured. The University of Buffalo is to be congratulated upon securing a thoroughly constructed, beautiful building, with all the modern improvements, and carefully adapted to the most advanced dental instruction.

THOSE AMALGAM FILLINGS.

The fillings made in a steel matrix and referred to in the editorial headed "Some Vexed Questions," were subsequently sent to Prof. J. Edward Line, of Rochester, and he reports as follows, fully corroborating the results reached by other observers:

"As requested, I have looked over the filled cells sent me for examination, and take pleasure in reporting as follows:

I first used my monocular, armed with a 2-inch objective of 22 degrees angle; afterwards with a ½-inch of 98 degrees angle. I found by means of the first, and corroborated by the use of the second, as follows:

No. 1 Filling above the cell showing expansion.
“ 2 “ below “ “ shrinkage.
“ 3 “ below “ “ shrinkage.
“ 4 “ above “ “ expansion.
“ 5 “ below “ “ shrinkage.
“ 6 “ same plane as cell.
“ 7 “ below the cell, shrinkage.

The 2-inch was used first for "general survey," subsequently for more special work. These results were not only corroborated, but emphasized by the power suggested by Dr. Black. The position of the filling "above," "below," "in the same plane," was determined by the micrometer screw of the microscope, and might have been made to read in degrees, but this were crudity itself in view of the refinements of instrumentation devised and made use of by Dr. Black.

The observations were repeated with the binocular, using the same objectives, and gave the same results, with the additional effect of "blocking out" the object, a characteristic of the binocular, within certain limits."

I am yours,
J. Edw. Line.

A WELL-DESERVED TROUNCING.

There has been a general uprising all along the line of dental journalism against the methods of the editor of *Items of Interest.* It was commenced by the editor of the *Ohio Dental Journal*, who has not yet learned the futility of the protests against pillaging that others had been making for years. One journal after another has now taken up the matter, until it would seem as if any one with the remnant of a conscience would have it awakened.

We wish to add our testimony in the case, for we believe that decent journalism demands a sharp protest against some of the methods of the editor of *Items of Interest.* He seems most emphatically to belong to that class of objectionable people who strain out a gnat and swallow a camel; who—

> Compound for sins they are inclined to
> By damning those they have no mind to.

He is too conscientious and pious to endure the smoke of a cigar, or to condone the drinking of a glass of wine at a social banquet, but he has no scruples against appropriating an article that belongs to a brother editor, effacing its trade mark by changing its heading and otherwise disguising it, and then attempting to pass off the spurious coin as original and genuine. There is little use for Christianity of that kind, and in the interests of common candor we suggest to the editor in question the propriety of devoting an occasional one of his monthly goo-goo homilies to the virtues of consistency.

DENTAL EXAMINATIONS.

Examinations for license to practice dentistry in this State will be held as follows:

DATES.

September 22–25, 1896.
January 26–29, 1897.
April 6–9, 1897.
May 18–21, 1897.
June 15–18, 1897.

PLACES.

New York, Albany, Syracuse, Buffalo. Each candidate is notified as to exact place.

DAILY PROGRAM.

Morning—9.15–12.15.

Tuesday—Anatomy.
Wednesday—Chemistry and Metallurgy.
Thursday—Operative Dentistry.
Friday—Therapeutics and Materia Medica.

Afternoon—1.15–4.15.

Tuesday—Physiology and Hygiene.
Wednesday—Oral Surgery and Pathology.
Thursday—Prosthetic Dentistry.
Friday—Histology.

SALIVA AS A MICROBE KILLER.—It was already known that secretions of the mucous membrane, especially saliva, possess antiseptic properties under certain circumstances, which explains the reason why the germs which enter daily and hourly through the mouth do not reach a harmful development; but Edinger has now found the active material in potassium rhodanate, which is present in saliva. It was found by further researches that this rhodanate has the effect of carbolic acid and of corrosive sublimate, and at the same time is harmless to man. Saliva, especially that of fasting persons, plays a great part in popular medicine, and beasts, by licking, keep their wounds clean, and bring them to a quick healing without suppuration.

EVIDENCES OF PROSPERITY.

Dental colleges seem to be in a generally flourishing condition. A number of them already have, or are now constructing, buildings expressly for their use, and some of these are fine specimens of architecture. Only three years ago the Chicago College of Dental Surgery built a fine structure, but it has been found insufficient for the wants of the great school, and an addition, doubling its capacity, is now in process of erection upon the lot which the wise projectors had at the outset made large enough for such a purpose, and which is located on the most conspicuous corner of the greatest professional educational center in the West. Most of the great medical colleges and hospitals of the great City of Chicago are within one block of it either way.

The University of Pennsylvania is putting up a fine new structure for its dental department, and it will, with the coming term, enter upon a new era of prosperity. The Philadelphia Dental College is also preparing for a new college structure.

Northwestern University Dental Department, and the American College, of Chicago, have consolidated their forces, and will henceforth be one. This should result in benefit to both, as well as to dentistry. The large number of students attending the American College will henceforth have the benefit of the instruction of the excellent teaching Faculty of Northwestern, and so each will be the gainer.

VACCINATION.

On the 14th of May, 1796, Jenner vaccinated his first subject, a boy named James Phipps. Previous to this, small-pox, it is estimated, destroyed every tenth person. In the century before Jenner's discovery 50,000,000 died of it. In Iceland, in 1707, one-third of the people died of it, and in Greenland, in 1734, it claimed two-thirds of the whole population as victims. It can be traced back to the beginning of the seventh century. The first great epidemic of it followed the disbanding of the armies of Mohomet after his death, when it is said that one-fourth of the people of the known world perished.

Previous to Jenner's day the only preventive was inoculation with small-pox virus, thus inducing the disease under the most favorable conditions. In these instances death from it was very rare, and any deep markings were unusual. But such inoculated people could communicate to others small-pox of the most virulent character. They were usually isolated after the inoculation. In 1776 the American Revolutionary Army was in danger of complete destruction at Cambridge, when the well-known Dr. Rand inoculated almost the entire army, with the consequence of but three or four deaths. But it was found that inoculation increased the death-rate as a whole, because the disease was so widely communicated. Hence inoculation fell into disrepute and was forbidden by law, even before the great discovery of Jenner.

Montreal Dental College.—The Montreal Dental College has finally been affiliated with Bishop Medical College, and henceforth will be able to confer the degree of Doctor of Dental Surgery. Dr. W. George Beers, the Dean of the Dental College, was the first to receive the degree, and it was conferred upon him honorarily. We congratulate him upon having now attained to the Doctorate, and sincerely wish it had been in course. He was worthy of it years ago.

Writing on Glass.—For marking prices on bottles, in fact for writing on glass in any shape, pure aluminum is frequently used. The lines can be made as fine or as heavy as desired, and for this reason the aluminum pencil may serve for marking and graduating burettes, pipettes, etc. The more nearly pure the metal is, the plainer and more serviceable the mark.

MEDITRINA, OR ELECTROZONE.—The *Australian Medical Gazette*, an excellent journal, by the way, speaks of meditrina, which is a refined preparation of electrozone, as a powerful disinfectant, germicide, and antiseptic. We have used it in the oral cavity for some time, almost to the exclusion of all other disinfectants. But its proper sphere is as a disinfectant only. As a germicide or an antiseptic it acts but secondarily. It decomposes infectious matter, and as it is without toxic properties it is admirably adapted to oral practice. But as a germicide or an antiseptic, it is inferior to a number of other preparations in common use. As a disinfectant it possesses virtues that we have never found in any other preparation.

THE AIR WE BREATHE.—Recent observations show that at an elevation of 6,700 feet there are 950 dust particles in a cubic centimeter, while at 8,400 feet there are 513, and at 13,600 feet only 157 such motes. Over the Indian Ocean the average number of dust atoms in a cubic centimeter was less than 500 for seven out of nine days, and on five days was less than 400. During a thick fog in the Atlantic the air contained 3,120 dust particles a cubic centimeter, while in a clear region just beyond the fog there were only 280 such motes. The dense fogs of London are due mainly to dust atoms upon which moisture has condensed, and it would now appear that fogs at sea have their origin in dust rather than in rain clouds.

PROFESSIONAL BLOTS.—Dr. Cushing calls attention to the carelessness of operators in removing deposits from teeth, and his expressions have been criticised by some who are jealous of our good name. But the statements of fact as made by Dr. Cushing are indisputable. There is not one dentist in ten who recognizes one in ten of the pathological conditions in the mouths of one of ten of his patients, or who attempts their treatment. We shall never rise to the possibilities of dental practice, or secure the high place in public estimation that should be ours, unless attention is often and forcibly called to professional shortcomings.

BIBLIOGRAPHICAL.—The following books have been received and will receive proper notice in the next number of this journal:

LEHRBUCH DER CONSERVIRENDEN ZAHNHEILKUNDE. Von W. D. Miller, Professor an der Universität, Berlin. Mit 420 Abbildungen. Verlag von Georg Thieme, Leipzig, 1896.

PATAOLOGIE DE LA BOUCHE. Par le Dr. Léon Frey, ancien interne des hôpitaux de Paris; Professeur à l'École dentaire de Paris. 1 volume, de 279 pages, avec 32 figures, cartonné.

ILLINOIS STATE DENTAL SOCIETY.—The thirty-second annual meeting of the Illinois State Dental Society was held at Springfield May 12–15, 1896. A good program was carried out, and a large attendance was present. The following officers were elected:

President, C. R. Taylor, Streator; Vice-President, E. B. David, Aledo; Secretary, Louis Ottofy, Chicago; Treasurer, E. D. Swain, Chicago; Librarian, J. R. Rayburn, Fairbury. The next meeting will be held at Peoria, beginning on the second Tuesday in May, 1897.

LOUIS OTTOFY, Secretary,
Masonic Temple, Chicago.

PASSED AWAY.—There were few men in the West who exercised a greater influence upon dentistry than did Dr. C. W. Spalding at one time. For some years he has been little heard of, as he abandoned practice for other things in which he was not so successful. He died recently at River Point, R. I.

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.—The twelfth annual session will be held at Saratoga Springs, N. Y., commencing at 10 o'clock A. M., Monday, August 3d, and continue in session during the proceedings of the American Dental Association.

It is earnestly requested that all State and Territorial Boards of Dental Examiners will send delegates.

CHAS. A. MEEKER,
Secretary and Treasurer.

CARBOLIC ACID.—Vinegar is an antidote when applied to the skin or mucous membrane burned by carbolic acid, and it causes a rapid disappearance of the characteristic whiteness, as well as of the anæsthesia produced, and prevents the formation of a slough. It also neutralizes any carbolic acid that may remain, and hence, when the latter has been swallowed, vinegar mixed with equal parts of water should be given, and the stomach then washed out.

THE AMERICAN DENTAL SOCIETY OF EUROPE.—The American Dental Society of Europe will hold its twenty-first annual meeting in Dresden, Germany, August 3, 4, and 5, 1896. All members of the profession who plan to be in Europe at that time are cordially invited to attend. Further information can be obtained of the President, Dr. John H. Spaulding, Paris, or of William A. Spring, No. 26 Christian Street, Dresden, Secretary.

OUR NATIONAL SOCIETIES.—The American Dental Association, The National Association of Dental Faculties, The National Association of Dental Examiners, and The National Technic Association, all meet at Saratoga this year. The time for the convening of the American Dental Association is the first Tuesday in August, and the other societies meet either just before that date, or at the same time.

ANTIQUITY OF TIN.—Tin is one of the oldest known metals. The Chinese used it in the fabrication of their brasses and bronzes from time immemorial. In the book of Numbers it is among the list of metals in which, among other things, Moses and the Israelites spoiled the people of Midian. The ancient Romans used it for coating the inside of copper and brass vessels.

COMMEMORATION.—At the fiftieth anniversary of the Ohio College of Dental Surgery, held in Cincinnati, April 16th ult., a marble commemoration tablet to Dr. James Taylor, founder of the college, was unveiled. It is well thus to keep green the memories of the men who have served their profession faithfully, and who have made succeeding generations their debtors.

ANOTHER DENTAL COLLEGE.—A new dental college will be opened in Pittsburg with the coming term, Dr. J. G. Templeton being the Dean. There is a considerable territory in western Pennsylvania that might be made tributary to an institution in Pittsburg.

DIARRHŒA.—Forty per cent. of the deaths in the City of Buffalo during July of year were from diarrhœa. A little more than half of them were of children under age of five years.

THE SOUTHERN.—The Southern Dental Association will meet at Asheville, N. C., July 28th, instead of at Nashville, in November, as was originally announced.

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ANCIENT AND MODERN HYPNOTISM.

BY W. C. ACHARD, GLOUCESTER, N. J.

Read at the regular meeting of the Truman Dental Society, April 4, 1895.

I will endeavor to give a brief history of hypnotism, a description of the peculiar phenomena accompanying it, and a few words regarding its application in dentistry:

Hypnotism, of which the student of medicine has heard a great deal during the last few years, is by no means the new theory that many consider it; in fact, it is the very oldest method of curing diseases.

There is a sect in Egypt which has practiced it for over 4,000 years. Later on we have the Mumo-Jumbo-men of Africa, the medicine-men of the American Indian, the "charmers" of India, the Roman sibyls and Greek oracles. Of the last named we have, foremost, the oracle of Delphi, where in Apollo's temple a priestess sat for hours on a three-legged stool, which stood over a chasm in the ground, from which rose vapors of sulphur. In due time she entered the somnambulistic state, and prophesied to the awed listeners. Among the Israelites we have the well-known story of the "Witch of Endor." But of all followers of this most wonderful art, the fakirs in India surpass in skill all European hypnotizers. It is there where the greatest cures of diseases are effected, although accompanied with much unnecessary mummery.

In the middle ages there were the witches, which, in most cases, were poor unfortunates who had more than ordinary power of "animal magne- ," (as Mesmer called hypnotism). Then came, in 1662, Greatrakes, hman, and a distinguished soldier, who had a revelation in a dream could cure scrofula by the laying on of hands. He accomplished some remarkable cures, and was followed, in 1773, by Gassner, an ex-monk of Suabia, who traveled through southern Europe, using Latin phrases in hypnotizing his patients. But it remained for Mesmer to demonstrate the existence of "animal magnetism" in the human body.

Friedrich Anton Mesmer was born in 1734. After studying medicine in Vienna, he began his researches in "animal magnetism," the result of which I will give in his own words. He says: "Through certain manipulations, such as touching, stroking—in a word—magnetizing, even simply by merely a strong act of the will, one can produce this power in persons, impart it to others, and cause the most marvelous and wholesome effects." But he was considered a juggler by medical men, and expelled from Vienna, in 1777, for the alleged cure of a blind girl, (the case of Marie Paradise). He moved to Paris, and opened there his famous parlors. As it may interest you, I will describe his method for the treatment of all diseases: In the operating-room there was, in the middle of the floor, a round tub, with a diameter of five feet, which was provided with a lid. On the bottom of it bottles were placed in such a way that the necks of some pointed to the center, and of others to the periphery. The tub was then filled with water to cover the bottles, and bent iron bars protruded through the lid. The walls were covered with mirrors, which, according to Mesmer's idea, heightened the effect of the hypnosis. The patients were seated around the tub closely, and touching each other's knees, each holding one of the iron bars protruding through the lid, and also each other's hands. They were then connected by a cord, which was tied around their waists to assist in the passing of the "magnetic fluid." A mystic twilight pervaded the room, and the ear was charmed by sweet music of the harp and piano, and also by the soft melodies issuing from a harmonium, which Mesmer played with a master hand. After some time, the men and women sitting around the tub began to have peculiar sensations, as nervous twitchings, etc., and it was then that Mesmer entered solemnly, dressed in a fantastic robe of embroidered silk, holding in his hand an iron rod, with which he majestically walked around, stroking the patients. Some terrible crises then ensued, the patients became hysterical, some having terrible convulsions. The most afflicted were then placed in a room, the floor and walls of which were padded.

It must be admitted that Mesmer really achieved some remarkable cures, which were discussed by the whole scientific world, and which led to the celebrated French Commission, appointed in 1784, by the government, to inquire into the nature of the new phenomena. This learned body of scientists included Franklin and Lavoisier, and the result of the investigation may be seen in the last words of this report: "Magnetism is one more fact in the history of human errors, and a great proof of the power of imagination." It may be stated, incidentally, that Mesmer closed his parlors to the Commission, and they obtained their results from the parlors of one of his friends, Dr. Chas. D'Eslon. Mesmer then retired, and left France at the outbreak of the French Revolution, and died in England, in 1815.

Since then, hypnotism or mesmerism, as it was called, has become an established fact. Prof. Charcot, the famous neurologist of La Salpêtrière, in Paris, commenced, in 1878, his investigations of the effect of hypnotism on hysterics, and demonstrated its different stages.

Another school is in Nancy, with Bemheim and Liébault at the head, and since July, 1886, there has been published a monthly journal, *La Revue de L'Hypnotisme*, with such contributors as Dr. E. Bérillon, (the editor), Charcot, Luys, Voisin, Hack-Tuke, and others.

Hypnotism or mesmerism, of which somnambulism is the third stage, is that condition in which the will, self-consciousness, and sensations of the patient, are partially or entirely under the control of the operator, the subject losing, in most cases, all remembrance of what has passed during the hypnosis, but in which the subject, when hypnotized again, recovers the memory of the first hypnosis.

We will now consider the methods of producing hypnosis, which are as varied as the results. The ancient Egyptian sect, which I have mentioned, drew in the center of a white plate two triangles intersecting each other, and filled the figures with cabalistic words and signs. They then poured oil over the plate to make it shine more. After staring at the center of the plate for a few minutes, they entered the somnambulistic state. In Constantine, the members of the tribe of Beni-Aïaoussa sit down in a circle. After some time they begin peculiar swaying movements, until at last they spring up, their bodies dripping with perspiration, when with foaming mouths and in convulsions, they are absolutely insensible to pain, performing such feats as piercing their flesh with daggers, walking on hot irons, etc.

In Turkey, and Africa, there are to-day men who hypnotize themselves by staring intently upon their own umbilicus and pressing their tongue to the palate. After they are thoroughly under the hypnotic influence, they are put into an air-tight sack, which is sealed, then into a vault, which is also sealed and covered with earth, upon which grass is sowed. When the whole mound is covered with grass, the vault and sack are opened, and the man de-hypnotized, which is done by forcing open his mouth, pulling out his tongue, (which has settled into the pharynx), and then producing artificial respiration. Even after thus having been buried alive for months, the individual is said to be none the worse for his experience.

Other methods of producing hypnosis are to let the patient stare at a highly polished metal cap, or at a crystal, or any small object held at a distance of two to three centimeters before the eyes. A very good method, however, and one used by many operators, is Gessman's, which he describes as follows in his book "Magnetismus and Hypnotismus": "I sit down opposite the patient, make her close her eyes, take her hands in mine so that the four thumbs are pressed against each other, tell her to be quiet, and to yield unresistingly to the first inclination to sleep. When she has fallen asleep—generally within ten or twenty minutes—I increase the sleep by some strokings over her head and chest, and try to induce her to talk. This I easily achieve by placing one hand on her head and taking one of her hands in my other hand, while I, speaking towards the pit of her stomach, ask: 'Do you hear me?' which question must often be repeated four or five times before I receive a very weak answer." Now is the time for further experiments. Gessman uses a preliminary test to ascertain whether or not the patient is susceptible to hypnotism. This he does by telling her that in his organization there is a strong evolution of electricity, which enables him to electrize persons. He lets her seize with both hands two fingers of his right hand, and after some time asks if she feels anything. If she is susceptible, she feels a peculiar crawling sensation at first, and then a numbness in the upper part of the body. Then he says in commanding tone: "Hold my hand tight—tighter—tighter still—well! Now you can not let go my hand;" and really she can not. Blowing on the hands and telling her that she is free ends the spasm.

Thus could be enumerated many different methods; in fact, every operator has his own. Persons of a weak will are usually more susceptible than others. Take a child for example: When you, as a stranger, look at it fiercely and tell it "do this," it will do it, for it recognizes the superior will unconsciously, and that is only a mild form of hypnotic suggestion.

The methods of de-hypnotizing vary also very much. You may use the same methods employed to revive a patient who has fainted. The simplest method is to blow on the forehead. Some persons are de-hypnotized by the simple command, "Awake!" Or if you tell them that they shall count from one to ten, and awake when they say five, they will do so, and then keep on counting (not knowing why), or else let the word six die out on their lips.

The many phenomena of hypnotism have been divided into separate stages and classes by different authors. We will only consider Charcot's classification. He accepts the following three stages: First, the cataleptic; second, the lethargic, and third, the somnambulistic; which are described extensively by Dr. Paul Richter,* a pupil of Charcot. The cataleptic state is produced by staring at some object, by a sudden strong light placed under the eyes, the sound of a gong, or a tremendous peal of thunder; also by sudden emotions, as fear, wrath, etc., when a person is for a shorter or longer time deprived of the power of speech or mobility. It also develops from the lethargic state when the already-closed eyes are suddenly exposed to strong rays of light by the raising of the lids. It sometimes occurs before the narcotic state, during the administration of anæsthetics. A person who has been hypnotized is often very easily put in the cataleptic state by the clapping of the hands, the report of a gun, the sound of a gong, etc. An amusing incident illustrating this may be told here:

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* P. Richter: "Études clinigues sur la grande hystérie on hystério-épilepsie." Paris, 1895.

A woman had been suspected of stealing photographs from La Salpêtrière, at Paris, but upon being questioned, she absolutely denied it. One day she was surprised, standing motionless at the place where the photographs were kept, with one hand stretched out grasping one. It seems that a gong was sounded in the next room to hypnotize a patient there, and this woman also immediately fell into the cataleptic state, which led to her discovery.

The characteristic of this state is immobility. The eyes are open and staring; respiration almost ceases; the limbs retain the most difficult positions in which they are placed; the skin is insensible to the strongest irritation, but the muscular senses, and those of hearing and vision partly retain their activity, and are susceptible to suggestion. Catalepsy ceases by a return to the normal condition, or by changing into the lethargic state. This state is produced by staring, or by continual pressure on the eyeballs. It can be produced from the cataleptic state by a simple closing of the eyelids. It is often preceded by epileptic phenomena, such as foaming mouth, asthmatic respiration or tetanus. The principal characteristics are complete insensibility of skin and mucous membrane, irritability of motor nerves and often insensibility to suggestion. Respiration is deep and quickened; limbs and body are perfectly relaxed. The muscles contract by stroking their tendon, and can also be excited directly. By opening the eyes the cataleptic state is reproduced.

The somnambulistic state is produced from the lethargic by a pressure or friction on the cranium. It is the one generally produced by magnetizers, and is characterized by absolute insensibility of the skin and mucous membrane. The senses are also sharpened, and the subject feels a certain personality, an ego, which may be illustrated by the following example: Before a patient in the cataleptic state are the requisites for shaving. They are touched by the operator and the patient at once begins to shave himself, but on being pressed on the cranium he stops and asks, "Why am I shaving myself? I certainly do not need it!" On raising his eyelids he will go back to the cataleptic state and resume his shaving, but care must be taken that he does not cut himself, as he is absolutely insensible to pain. This state is produced by all methods which act on the imagination, and is especially susceptible to suggestion, which susceptibility is almost limitless, the actions of the somnambule often bordering on the marvelous.

Among the physical effects of hypnotism we may name the muscular sensitiveness in different stages, varying from the *flexibitis cerea* in the cataleptic state, to the spasm and tetanus following it. Indeed, the rigidity of the muscles is at times so great that magnetizers produce the cruel experiment of suspending a person in that condition between two chairs, in such a way that the body rests only on the extremes of the head and feet; and to show this power over the subject, the magnetizer sits with his whole weight on the thus suspended body. This experiment is the more dangerous, as it may produce tetanus of the respiratory muscles. Analgesia, or entire insensibility to pain, seems to be a characteristic of all stages of hypnotism; with a few exceptions, in the somnambulistic state, where it is not only absent, but where the sensibility to pain is often very much increased. In this hyperæsthesia may be found an explanation why the somnambulist may recognize things with his eyes closed, or walk in the most dangerous places with absolute safety. The slightest touch with a hair is accurately localized by him.

In the cataleptic state, the senses of sight, hearing, smell, and taste, may be affected by suggestion, and very amusing experiments are made; as for example, one may give the person a green persimmon to eat, and tell her that it is a good apple, upon which she will enjoy it very much. Or on the other hand she may be given a good apple and told that she is eating a green persimmon, when she will immediately make a wry face and eject from the mouth what is still in it.

Among the mental effects, we have in the first place that on memory. It is a characteristic that the deeply hypnotized person upon awakening remembers nothing of what has passed during the hypnosis, which, however, can be controlled by the operator.

If, for instance, you tell your patient that he will remember everything that has passed upon awakening, he will do so. Very peculiar hallucinations may be thus brought about. We will take an experiment made at Nancy, for illustration. Mrs. A. is hypnotized by staring. While asleep she is made to believe that three minutes after awaking she will go and embrace a little peasant woman who is sitting in the corner of the room, and whom she then sees for the first time. At the moment predicted she goes and embraces the woman, who is quite astonished at this unexpected caress. When a moment afterward she was asked: "What did you do?" She answered: "I? Nothing!" "Yes, you embraced that woman!" "No, certainly not!" She had already forgotten what she had done. From this it may be seen, that commands given during the hypnosis will afterward be carried out unconsciously, and this has led to many serious cases of criminal actions. We all remember the historic trial in Paris a few years ago, when a woman murdered a man in obedience to a command given her while under the hypnotic influence. And this brings us to the dangers and abuses of hypnotism.

I will only cite a few cases to show that the hypnotized can be injured by hypnotism, and that he can be used against or without his will as a tool for the service of crime. The sleep produced by hypnotism is not a normal one, but a nervous pathological state, and as all abnormal conditions of the body must injure it in time, it is obvious that repeated experiments on a sound and healthy patient are more or less injurious, and have a tendency to weaken not only the mind, but the body. It may produce such a susceptibility that a subject will be brought immediately under the hypnotic influence by the slightest cause. There is a case on record in which a man became hypnotized on the street by a light from a carriage coming toward him, and he at once became cataleptic. Should that man walk on a railroad track and see the headlight of a locomotive, it may have the same effect on him, and he would lose his life.

The following is an experiment by Liégeois to prove that a person can be used for crime against his own will: A young man, 25 years old, while under hypnotic influence, was presented by Liégeois with a white powder, and told that it contained arsenic. "You will immediately go to your aunt; there you will take a glass of water, pour the arsenic into it, dissolve it well in the water, and offer the poisoned drink to your aunt!" In the evening Liégeois was informed that the attempt at poisoning had been punctually performed. Thus we could enumerate many cases to show not only the good, but also the evils and abuses of this most wonderful art.

How can we apply it in medicine and dentistry? In medicine it has been used with great success all over the world. Insomnia, rheumatism, hysteria, etc., have been treated with its aid, and even amputations have been performed with absolute absence of pain. It may prove interesting to read Dr. James Esdaile's book on "Mesmerism in India," (London, 1846), in which, among other things, may be found a report of the medical and surgical cases treated by him with the aid of hypnotism.

In dentistry it has been used with more or less success. Many have been discouraged after the first few trials, but those who have carefully and with untiring efforts sought the benefits obtained by its use, have been rewarded with greater success than they ever hoped for. We all have had patients whose fear and nervous excitement was so great that it was difficult even to make a proper examination of their teeth. Just there hypnotic suggestion may prove of the greatest benefit. We can easily produce the first stage, and suggest quiet, absence of fear, and willingness to undergo any dental operation. This will aid the operator and patient very much, and hypnosis may be produced again after the operation, to suggest the same after the patient leaves the chair. An inexperienced operator may simply suggest a tranquil frame of mind for the time being, and bad results may follow it. It is, therefore, essential to suggest that the patient shall feel absolute quiet and calm after the hypnosis, and shall not experience troublesome consequences. Too much stress can not be laid on this, as the omission may bring on extreme nervousness, headache and disturbed sleep. The question now arises: Can hypnotic suggestion be used successfully to produce analgesia during such minor dental operations as excavating cavities, extracting pulps, etc.? Dr. Thomas Fillebrown, of Boston, in his paper on "Hypnotic Suggestion as an Obtundent and Sedative," read at the World's Columbian Dental Congress, August 18, 1893, asserts that it can. For this purpose he induces the first and second degree of the Nancy School, and by constant repetition of "Sleep, sleep, you are resting, you are not suffering, you are not dreading it, you do not care for it, sleep, sleep, etc.," he maintains the hypnotic sleep, which otherwise might discontinue as soon as pain is produced. One especially good feature of employing hypnotism for obtunding sensitive dentine is, that the lightly hypnotized patient in most cases shrinks from pain, though he may not feel it, and thus we have a guide to avoid the pulp, which we have not in any other method of allaying pain.

Dr. Gomer Sandberg, of Stockholm, issued in May, 1893, a pamphlet, *Quelques mots sur L'Hypnotisme*, Stockholm, 1893, in which he describes the use of hypnotism for obtunding sensitive dentine in a case he had on the 20th of December, 1889. A lady came to him to have two teeth filled, but the extreme sensibility of the dentine did not permit even the touch of an excavator. He hypnotized the lady, and then suggested no agitation during the operation, quiet and insensibility of the teeth. The last words he repeated many times. He then commenced his work, which lasted one hour and a half, and during which she was perfectly quiet, not experiencing any pain whatever.

In conclusion, I will say that the practice of hypnotism requires a great deal of care and experience, and that the hypnotizer should have a good medical knowledge, which, it may be said, the modern course in dentistry strives to impart to its student. Its study is not only interesting and instructive, but it is an art with which the good student of medicine and its various branches should make himself acquainted. With a firm will, and a determination to surmount all obstacles, the conscientious student of hypnotism will pry into its mysteries, and, awed with wonder, exclaim with Shakespeare:

> "There are more things in heaven and earth
> Than are dreamt of in your philosophy!"

THE CLASSIFICATION OF SO-CALLED GREEN STAIN OF THE TEETH.

BY DR. W. C. BARRETT, BUFFALO, N. Y.

A paper read before the Dental Society of the State of New York.

Probably fifty per cent. of the teeth that fall under the observation of the dentist are affected by some form of pigmentation. Dentists have speculated upon it ever since there was a dental profession; but until the time of Miller there never was, so far as I know, any such series of scientifically conducted experiments to positively determine its nature and character as could be accepted as definite. I can not but believe that he has permanently settled the question of the etiology of this appearance, in the memorable article appearing in the *Dental Cosmos* for April, 1894. If he is right, that determines its classification. After the president of this society had refused to accept my declination of the honor which he tendered me nearly a year ago,—that of preparing this paper,—it was my good fortune to have Professor Miller as my guest for some days, and we went over this whole subject together. I was then, as now, convinced that those who have criticised his article as inconclusive either had not read it carefully or had not comprehended it fully. It was inconclusive in so far as it failed to support the crude theories previously advanced, but it was conclusive in establishing the fact that the so-called grain-stain is usually a superficial deposit, and that it probably has no special pathological signification, except for diagnostic purposes.

When Dr. Miller was at my house, he had with him a large number of teeth exhibiting the stain, some of it green, some brown, some red, with the varying intermediate shades. There were the teeth of children, and of adults at different ages. There were a few cases in which, beneath the stain, was found eroded enamel, and there were many instances in which no sign of decalcification existed under it. There was indisputable stain upon decayed tissue, and it dropped into and followed the depressions of furrowed enamel; but in no instance, so far as I could observe, did it appear other than as a distinctly superficial deposit. We removed the enamel-cuticle, or Nasmyth's membrane, from teeth upon which there was a marked pigmentary deposit, and in every instance the stain came with it, leaving the tissue beneath it clear, white, and unmarked. This was the case in instances of furrowed enamel, in teeth with eroded enamel, and in those in which the enamel seemed comparatively perfect. Let me say, however, that teeth whose enamel is uneroded, smooth, and polished are less frequently affected by stain, for the same reason that salivary and other deposits are not likely to be found on polished surface. It requires depressions, either minute or more defined, to afford lodging-places for the initial deposits, and hence eroded enamel is more predisposed to pigmentation than that which is perfect.

For purposes of classification, I shall make no distinction between the green, the blue, the black, the brown, or the red stain, or their intermediate shades. Clinically they are the same, and they have the same generic origin. If they are metallic in their source, the color depends upon the metal whose compounds form the stain. If they are due to bacteria, it depends upon the nature of the chromogenic organisms. Hence, no distinction will be made, except as indicating the origin of the discoloration.

Mineral Sources.—As one important factor, I will mention the metallic deposits that we frequently find upon the teeth—usually the incisors—of workers in copper, bronze, brass, iron, mercury, lead, nickel, and silver. This has all been pointed out by the authority that I have mentioned, and he also refers to the fact that trumpeters often show a discoloration brought about by the contact of the teeth with the brass mouth-piece of their instrument. The teeth of tailors, also, are often discolored by the coloring-matter of the cloth in which they work. Among 150 persons, workers in brass, bronze, and copper, for more than one year, whom Miller examined, he did not find a single individual who did not show more or less of green-stain upon the upper teeth, and this in varying shades. I may say that I have myself examined about fifty such, with nearly the same result, the only exceptions being in persons who were fastidious in the care of their mouth, or whose teeth were incrusted in other deposits.

There are many animals whose teeth are covered by shining metallic deposits. These are chiefly or wholly among the graminivora. In some species the teeth of nearly every individual appear as if freshly gilded. In others they are quite black. Miller says he has found manganese deposits upon the teeth of the elephant, rhinoceros, dromedary, elk, deer, and cow. We all know that superficial discoloration is frequently found at the margins of amalgam fillings, and workers in mercury are liable to special deposits upon the teeth. The very hair of copper-workers becomes discolored, and their teeth form no exception.

Fermentation of Organic Matter.—The white, cheesy deposit that is found about the necks of teeth, especially such as suffer from neglect, is apt in the course of the fermentation which it undergoes, to become discolored, or, rather, to leave about the necks of the teeth a pigmentary deposit. This may arise from the mixture with it of mineral substances which are finally precipitated, or it may be the result of the chemical changes through which the matter passes. This cheesy deposit may have either an acid or an alkaline reaction, according to the character of the fermentation which is going on. If it be acid, the erosion of the teeth beneath it may be easily comprehended. We have but to reflect that the surface of the cervical portions of the tooth being thus superficially decalcified, if the character of the fermentation should change, and mineral or other pigmentary matter become a constituent of the deposit, it may be precipitated upon the eroded surface of the tooth, and thus give origin to a distinct stain.

Chromogenic Bacteria.—It is well known to all observers that certain forms of micro-organisms produce a distinct coloring-matter. Many of the microscopic fungi do this, and we find the most brilliant colors in the mushrooms, molds, etc. Deposits about the teeth may become infected with these chromogenic or color-producing bacteria, and thus the tissue will be stained yellow, red, or some other color.

Sanguinary Deposits.—I believe it to be the case that in some instances the discoloration of the teeth is due to deposits from the blood. Miller says that if in the presence of air or oxygen a current of sulphuretted hydrogen is brought in contact with fresh blood, sulfomethæmoglobin will be formed, which is greenish-red in concentrated and green in dilute solutions. It is not probable that this will be a very important factor in the production of these colored deposits, yet it will account for some instances.

Foreign Organic Matter.—We all know that the teeth of tobacco-users become deeply dyed in some instances. This is not usually confined to any special locality, but if when applied, as it usually is, alike to all portions of the tooth it stains, one may readily comprehend that other substances may be introduced into the mouth whose action will, because of limiting circumstances, or through non-liability of some of the tissues to their effects, cause a pigmentary deposit.

The Green-Stain of Childhood.—Thus far we have considered only the discoloration that may be found on the teeth of adults. It is evident that the same rules as to classsfication can not obtain in the case of children. We must eliminate the metallic causes and search for other origins. Sufficient still remains in the action of ferments. There is not the same diversity in the color of the pigments, and this leads to the conclusion that there are fewer causes to classify. At first thought, we might imagine that the enamel-cuticle plays an important part in the green-stain of childhood, but it has been shown that it has appeared upon the surface of phosphate fillings in the deciduous teeth. That it may be changed by the application of bleaching-agents like peroxid of hydrogen, would indicate that it is of organic origin, although it does not positively demonstrate it. There is a constant decomposition of food about the teeth, and bacteria are especially active in the oral cavities of children. The secretions of the mucous glands, that are somewhat specialized at the gum-margins, are frequently degenerated, and, under the action of ferment organisms, decomposed, and this may cause a pigmentary deposit, which will naturally follow the festoon of the gums and give the crescentic appearance which the green-stain of childhood usually presents. It follows, then, that this form of discoloration should probably be classed with those which are of fermentive or bacterial origin.

Conclusions.—The chief point of interest to us, as dentists, arises from the question as to whether these stains are an etiological factor in pathological conditions. I am well aware that this properly forms no part of the task assigned me, but it is impossible to range the different forms of discoloration into classes without reference to their origin. The part assigned me is utterly barren, if the pathological significance of the deposits can not be adverted to. From what I have already said, it may be gathered that I have little faith in the pathological significance of green-stain, and that I hold the belief that we, as practitioners, need not trouble our heads about it, except to remove it by mechanical means. The erosion that is often found beneath it must have preceded its deposit, for it invariably ceases when there is a complete coating over the eroded places. It never penetrates beneath the enamel-cuticle when that exists upon the tooth. It may be dissolved by chemical agents, and the most careful chemical analysis shows nothing in it that would be injurious. While it may be infected by bacteria, and while the stain may be the effects of micro-organisms, it can not be shown to entirely consist of those organisms. Heide and Charpentier believed it to consist of leptothrix threads, but later observations show that this was a manifest error.

I can not conceive of any further classification of the stains of the teeth than through the sources of the pigmentation, and these are so widely variant that, practically, they are numberless. I have enumerated some of the more prominent ones, and leave the subject with you in the hope that further information may be elicited in the discussion of the subject.

THERAPEUTICS OF SO-CALLED GREEN STAIN OF THE TEETH.

BY DR. S. B. PALMER, SYRACUSE, N. Y.

A paper read before the Dental Society of the State of New York.

The above subject, as submitted by your committee, is divided as follows:

A. Agents facilitating the removal of the stain.

B. Agents acting preventively.

C. The proportion of recurrences of the stain, and of decalcification around fillings inserted, and whether one filling-material acts more beneficially than others.

With all that has been written upon the subject of green-stain, there seems to be no settled belief. Therefore, the writer will not add to the length of this paper by quotations from books or authority, but give a brief summary of his own observations from practice.

A. All who have removed this pigment know that it is far more difficult than it would be to dislodge ordinary tartar of the same thickness, especially when the enamel-surfaces are roughened, containing pits and fissures. One most effective and convenient agent to use is a detersive powder, of which there are several: fine pumice, powdered Arkansas stone, flour of emery, Tripoli powder, etc., moistened and used on strips, wooden points, and with brushes. The engine, with its ready appliances of small brushes, wheels of moose-hide, rubber cups, wooden points, disks, etc., will reach nearly every surface and perform the work rapidly. Probably the most practical and universal of the powders is fine pumice. A good wheel for flat surfaces is moose-hide. Rubber cups reach many difficult places, and are effective because they carry the powder much longer. Narrow polishing strips, with thin cloth backs, cut to a point at one end, passed between the teeth near the gums, charged with powder, are good for approximal surfaces. In cases of uneven surfaces of enamel, coarse pumice can be used to good advantage, as it will enter deeper into pits and depressions. Still with all the above-named appliances, the stain can not be readily removed from inaccessible surfaces. After experimenting with many agents, I have adopted pyrozone, three per cent., with which to moisten the powder, and, in extreme cases, add one or two drops of phosphoric acid, used for cement fillings, to a teaspoonful of moistened pumice. A tumbler of warm water, containing a little carbonate of soda, is good for rinsing the mouth.

As a bleachant from within the tooth, pyrozone seems to be the only thing now known to the profession that will restore, with any show of permanency, a pulpless and, therefore, (*therefore* in a majority of cases), discolored tooth to a shade approaching that of its ante-pulpless days. This property of pyrozone has been taken advantage of pretty generally, and discussed to that extent that nearly, if not quite everything, claimed for it is conceded.

As a decolorizer from without, less is known, and, as a consequence, less is said of it. The removal of stains (green or other) mechanically involves or necessitates the loss of more or less of the tooth, robs the superficial portion of its fine structure and luster, and prepares the way for a speedy return of a deeper dye, with repetitions of the process of removal until the child has outgrown the conditions of which green-stain is simply an indication, and of no more consequence *in itself* than red stain or blue. To avoid this mechanical mutilation, which is urged chiefly because of the offensiveness of the stain to the eye, two, of what appear to be purely chemical processes, have been resorted to:

1. The application to the stained surface of iodin, followed by weak aqua ammonia, (or aromatic spirits), repeating the applications at the same or a subsequent sitting until the stain disappears.

2. Removal of oily deposits from the teeth by the application on cotton of ammonia or bicarbonate of soda, followed by clear water, and this by twenty-five per cent. pyrozone, well rubbed in with cotton or a leather buff, followed in turn by soda, to neutralize the slight acidity and mitigate the occasionally caustic effects on the softer tissues. This latter treatment is effective to a remarkable degree, usually accomplishing its purpose promptly and always without injury to the teeth, either as to structure or luster, which we have demonstrated repeatedly, as well out of the mouth by immersing teeth in caustic pyrozone for periods of two weeks at a time.

In case the enamel is roughened and dissolved nearly through to the dentine, a stone wheel, fine grit and broad face, will give a better surface by grinding the prominent portions down, which will lessen the depression. In the event of sensitiveness, it is better to make two or more operations, leaving the surface polished each time. To reach deep pits, the small brushes used with the engine do nice work; by cutting them back one-half the length and to a point, they are better than wooden points to hold the powder.

B. Agents acting preventively. Leaving out the *primary cause*, prevention consists in so changing the condition as to prevent secondary deposits. The two most prominent conditions favoring green-stain are roughness of enamel and uncleanliness, or neglect to remove that which ultimately produces it. After a case has been treated as above mentioned, with ordinary care in brushing, and the use of a dentifrice, there is seldom any recurrence. With the habit of neglect which allows the deposit, one lesson in prevention will not always be sufficient, although the patient may think the instructions have been followed. It is much like removal of tartar: by care, it can be prevented from any considerable lodgment; by neglect, it accumulates. Usually, when a patient calls for a removal of the pigment, both density of the enamel and understanding how to prevent a recurrence are greatly in favor of success.

C. The proportion of the recurrences of the stain and of decalcification around fillings, and whether one filling-material acts more beneficially than others.

The proportion of recurrence is determined by the attention given to instructions. With young children and no one to see that the teeth are cared for, we would look for a large percentage of recurrences. With proper care quite opposite results would follow.

Decalcification around Fillings.—I am not prepared to say that the color has anything to do with disintegration of the enamel. We find that condition both with and without the pigment. Usually both conditions are results of allowing food to remain confined by the lips to undergo fermentation with its attendant consequences.

So far as my practice is concerned, in either case gutta-percha is best for young teeth, even if renewal is necessary, until the dentine becomes dense. Gold may be safely used as inlays; a thin plate of gold cut to fit the cavity, the under surface being raised to sharp points with a graver and set with cement, gives perfect satisfaction and is durable, while a gold filling would prove an injury. The most satisfactory fillings, when done, are porcelain inlays inserted in like manner.

The above conclusions are drawn from study in practice. One case in particular afforded several facts relating to specific conditions. A man, 53 years of age, whose teeth have been under my care for thirty-five years or more, called for work some eight months ago, and, to my surprise, presented the most pronounced green-stain I ever saw. The upper centrals had a thick deposit extending from the gums over one-half the length of the crowns; color, dark green; the laterals not coated so heavily and color lighter; both color and deposits shaded down to second bicuspids. The thin deposits were a nice shade of green. The lower teeth had less deposit, and all upon the labial surfaces. I have no recollection of having to remove green-stain from the patient's teeth before. The removal was attended with great difficulty, showing it to be genuine. It also called for the agents mentioned in connection with the pumice-powder. The enamel had become roughened under the thick portion on the centrals, not so deep as to hinder an even surface and good polish. Before finishing this paper I wrote for the patient to call, which he did, and there is no evidence visible that green-stain ever troubled his teeth. The practical lessons drawn from this case are as follows:

Green-stain will appear upon the teeth of adults when the conditions are favorable.

This patient was on the road for a confectioner. He had not used a brush for a long time; said he had neglected his teeth, and would do better. In answer to the question, "Do you eat much candy?" said, "No; probably not much more than you do." He said, "This is the only kind I eat, and but little of that," and took from his pocket and gave me two pieces of molasses candy nicely done up in wax paper. It was a soft candy, and contained starch or glucose; it was not all sugar. To me it was evident that this candy was daily indulged in. Thus we have neglect and sweetmeats as a cause in this case. It showed that the deposit did roughen the enamel. The difficulty of removal showed a genuine case of green-stain. It proved that, with proper care with brush and powder, the pigment did not reappear. It also led to investigation as to the cause why the stain is less upon the lower teeth, and also why it is usually found upon the front teeth, growing thin back to the cuspids or bicuspids. The lower teeth presented an unusual amount upon the labial surface of the incisors and cuspids, though not as much as on the superior, and none upon lingual surfaces. The latter surfaces were covered with a soft, black tartar, colored with cigar-smoke. The tartar closed the spaces on the lingual side, which prevented the washing of saliva through the spaces to the labial surfaces. This suggested that saliva might be a preventive, or solvent of the pigment. Bearing this in mind, I have looked for indications of proof. We find little stain in connection with the saliva-ducts, and most frequently where the lip or lips prevent free circulation. In support of this theory a lady presented a well-cared-for set of teeth with no stain except upon the second and third lower molars. On either side the teeth leaned in, and were protected from the brush by the first molars and teeth forward. There was no appearance of stain upon the upper molars or the incisors, the mouth in general being well cared for.

By close observation I am convinced that, with saliva-ducts discharging freely under the lips, there would be little green-stain and still less erosion of enamel.

PULPLESS DECIDUOUS TEETH.

BY SENECA B. BROWN, D. D. S., FORT WAYNE, IND.

The importance of retaining deciduous teeth, especially molars, until normally shed, is recognized by all who admit that imperfect mastication and insalivation impair digestion and assimilation, at this age so essential to mental and physical development.

The method of filling deciduous root canals with materials used in permanent ones, so interferes with the process of resorption, causing a tenderness that prevents free use in masticating, that little effort is made to retain these teeth.

A practice adopted many years since, with good results, by the writer, was suggested by what was known in its time as risodontrypy, an operation practiced by Dr. Hullihen on permanent teeth; however, nothing attending that operation is now accepted in the treatment of deciduous teeth, excepting the vent under the margin of the gum.

The operation consists in treating all deciduous teeth having pulp complications, as in our practice in permanent cases, up to the point when ready for filling. In molars the tooth is perforated with a small drill entering the cervix at the mesio-buccal line, one-sixteenth of an inch beyond the gingival border, and terminating on the floor of the pulp chamber. This opening must communicate with the pulp canals to afford a vent for any fluid accumulating, the gum serving as a valve to exclude extraneous matter.

The root canals are treated with nitrate of silver, to resist decay. Place a lead disc or floor, well adapted, on the base of the cavity, to prevent the filling material obstructing the vent which must communicate with the root canals. Upon this floor, fill or crown, as preferred.

Assorted sizes of discs are obtained by rolling lead into a sheet 28 gauge, and using harness-makers' punches.

The suggestion of impurity from stagnant fluid in the root canals will not be realized to an objectionable extent if the operation is carefully performed. The slight accumulation of fluid will have motion incited by the gum-valve.

Deciduous molars are not usually decayed to an extent to encroach upon the pulp, until a time when their roots are considerably wasted, thus shortening the length of the canal, which continues to lessen, rendering less and less the little space for fluid occupancy until they are shed, the claim for this method being that the organ of resorption is uninterrupted in the performance of its function.

Where devitalization of the pulp, or treatment of abscess is not indicated, the work is completed at one visit, without exhausing the patience of the child.

THE PHYSICAL CHARACTERISTICS OF THE TEETH.

AN EDITORIAL EPITOME.

Dr. G. V. Black has contributed a series of articles to the *Dental Cosmos*, that are of more than usual interest and import. The series commenced in the May number, and the first article was entitled, "An Investigation of the Physical Characteristics of the Human Teeth in Relation to their Diseases and to Practical Dental Operations, together with the Physical Character of Filling Materials." To make a careful study of all these articles, and properly to digest them, is what will be done by very few dentists. But all should be familiar with what Dr. Black has said and done, and to this end a synopsis of them as a whole will be attempted.

The author sets out by reviewing the various theories of decay that have been presented by different authors and observers, and then remarks that the hypothesis that the condition of the tooth-structure renders the tooth susceptible or unsusceptible to caries, exists in the minds of a large proportion of the members of the dental profession. This is evidenced by the frequent reference to "frail teeth," "hard teeth," "soft teeth," "chalky teeth," and to the assertion that fillings should be selected in accordance with the condition of the teeth, and should have "adaptability." It is generally believed that the character of the teeth alters with the physical condition, and that general pathological changes leave their impress upon the dental structures. Yet little practical attention has been paid to the structural character of these organs, nor has investigation been made as to any possible modification that may occur.

There are certain facts that seem incompatible with the theory that changes occur in the teeth. First, they are the hardest and densest tissues in the body, and have the lowest vital endowment as to self-repair. Second, caries attacks the teeth from without, and presumably the vital forces have little to do with it. It seemed desirable, however, to examine into the matter, and to determine the relation of the physical strength of the teeth to the strength of the filling materials, to find out what was the amount of force with which the jaws were brought together, to ascertain the differences in the density of the teeth, the percentage of lime salts, strength, etc., and to find what relation such possible differences bear to caries and other dental diseases. It was necessary to learn if these varying conditions were capable of actual measurements, and if so to devise and construct suitable apparatus. Measuring instruments were therefore prepared, and crucibles for calcining, ovens for drying, and tubes for macerating were made, with apparatus for steam sterilization. This was a work of time, as all must be capable of doing their work with extreme delicacy. Dentine has wonderful hygroscopic properties, and absorbs and gives up water to an almost incredible extent.

It was found that for proper comparison, the tissues of the tooth must be always taken from the same exact location. The dentine of the crown of a tooth does not present the same characteristics as that from the root. The sections selected must be of the same temperature, and especially subject to the same hygrometric conditions. On certain days it would be found impossible to determine the weight of a section of dentine with finely adjusted scales, unless due precautions were taken, because the section would so continually give off or absorb moisture that the scales could not be exactly balanced.

After all this preliminary work had been done, Dr. Black proceeded to examine a great number of specimens, to determine the results and to draw the natural inferences. He first described the person from whose tooth the section was taken, and gave the general physical condition, and that of the teeth. The age was noted, the exact tooth from which the section was taken, the general condition of the tooth, whether the pulp was alive or dead, and then he determined the specific gravity, the per cent. of water, the per cent. of lime salts, and that of organic matter. Then, after some hundreds of specimens were thus tabulated, a part of them were subjected to certain other experiments to determine their elasticity, blocks .08 of an inch square being taken. Their elasticity at 100 lbs. pressure was determined, and then at 150 lbs. The crushing stress was ascertained, and finally the average of the stresses. From all these data the final deductions were made, and are in brief as follows:

First. There is very little difference in the specific gravity of the same teeth in different persons. This indicates about the same relative density, but it does not imply that there is the same proportion of lime salts in each.

Second. There is a considerable difference in the specific gravity of different teeth in the same mouth, showing a difference in density.

Third. The organic matter in the tooth diminishes as the density, or specific gravity, increases.

Fourth. The free water, as distinguished from the water of crystallization, or that which enters into the direct composition of the tooth, varies considerably, but is greatest in youth, diminishing as age increases.

These facts, with others, lead to the conclusion that the original structure of a tooth is of more importance than has usually been supposed. The vitality, the life, what may be spoken of as the constitution of a tooth, is of as great significance as is that of the whole individual. This is not strange, as the relative vitality of the entire body depends upon that of its separate tissues and organs; the condition of a tooth, or of the living part of a tooth, is that which dominates its general inherent strength, and its resistance to depressing or disturbing influences. There is a continued increase in the density of the teeth, and in the proportion of lime salts, as age increases, and the teeth therefore follow the rule that applies to the other hard structures. But the tables show that this increase in density is greatest in early youth, or up to the age of seventeen years. It is then slower until the age of fifty is reached, when it again becomes more rapid. It is not known that bone follows the same general law.

It was found impossible to obtain the teeth of pregnant women, or to make observations that would establish or disprove the common belief that changes in the relative amount of lime salts take place at that time. But observation upon the teeth of women before, during, and after the child-bearing years, showed that there was no material difference in the relative increase of density, or lime salts, between men and women, before and after the climacteric of the latter. Hence, the inference is that pregnancy induces no special changes in the teeth, and that they do not lose their lime salts during that period, the proportion to be restored again after pregnancy shall have been completed. It is well established that women's teeth do not grow soft during the child-bearing period.

One of the strange results of the tabulations of Dr. Black is, that there is comparatively little variation in the amount of lime salts in the teeth of different individuals. The total range in 111 persons was but 4.67 per cent. The total difference in the average of the teeth in nineteen persons was but 1.82 per cent. We have been accustomed to account for the liability of teeth to attacks of caries, by describing them as "lacking in lime salts," "frail teeth," "below the medium in structure," and this has been specially dwelt upon by advocates of certain theories regarding the "compatibility" of specified filling materials. Dr. Black's observations show that these theories are not founded upon the facts in the case, because the supposed wide divergence in structure and the loss of lime salts in pregnancy do not exist. We must search for causes in other directions.

The observations recapitulated also show that it is not true that diseases of the peridental membrane attack teeth of a dense character, and which are supposed to have a certain amount of immunity to caries through that density, because the statistics of the examination into the physical structure of teeth that were peridentally diseased, shows that they had about the usual amount of lime salts. One case was that of a woman sixty years of age, who had lost her teeth through pyorrhœa. From an examination of fourteen of them, it was found that both the specific gravity and the proportion of lime salts were below the average, and yet the teeth had never been attacked by caries.

Perhaps the most interesting of the results of Dr. Black's investigations are those which bear upon the liability of teeth to attacks from caries, and the influence that their physical structure has upon this liability, and here all our preconceived theories are set at naught. Evidently we must either set to work to disprove Dr. Black's statistics, deny the inferences that are naturally drawn from them, or materially modify the generally-accepted views concerning certain pathological changes. We have been taught that differences in the density of teeth and their proportion of lime salts were indications of their liability to attacks from caries. All this seems disproved by Dr. Black's statistics. He finds a considerable difference in the density of different teeth in the same mouth, but caries does not most affect those which have the least lime salts. He finds comparatively little difference in the density of the same teeth in different individuals, while there is a marked contrast in their liability to tooth diseases. But there is no correspondence between the density of the teeth and their liability to decay. There is practically no difference in the percentage of lime salts between the cases in which the teeth are classed "of poor structure," "lacking in hardness," and those which dentists usually call "dense, perfectly calcified teeth." Look at these figures.

For all the teeth taken together, good, bad and indifferent:

Average age in years,	32.33
Average specific gravity,	2.092
Average percentage of lime salts,	63.54

In the exhibit of perfect teeth:

Average age in years,	36.26
Average specific gravity,	2.095
Average percentage of lime salts,	63.59

In the exhibit of carious teeth:

Average age in years,	31.50
Average specific gravity,	2.091
Average percentage of lime salts,	63.50

When these figures are corrected for age, it will be found that they are practically identical. What is the meaning of it? Certainly, there is no disputing the fact that they are either grossly incorrect, or that we must revise our etiological pathology. In the language of Dr. Black, "they show conclusively that neither the density of the teeth, nor the percentages of lime salts they contain, has anything to do with the liability of the teeth to suffer from caries; or in other words, the teeth of persons who suffer much from caries are just as hard, just as dense, just as heavy, and contain just as much lime salts, as the teeth of persons who do not suffer from caries."

Now, what do our advocates of "plastics for poorly calcified teeth," and "gold only in teeth above the average in structure," propose to do with these figures? They can not be ignored, and must be met. The conclusions of their author regarding the "adaptability" of filling materials, the proper "electrical conditions" and "tooth compatability," are expressed as follows: There must be "a general abandonment of the idea that the teeth of any patient are so lacking in density as to interfere with reasonable filling operations with any of the materials now in use. * * * * The teeth may be hypersensitive, a child may be too young to bear such operations, but the reason for deferring them is not to be found in the softness of the teeth."

And these conclusions come from a man who has made more real scientific experiments to determine the truth than all the advocates of the "compatability" theories have ever performed, or would perform in a hundred years, if their average for the past decade is to be maintained. What is to be done with these demoralizing figures? How are these confoundedly annoying demonstrations to be buried? They interfere sadly with our personal comfort. The whole thing was nicely settled, and when our gold fillings failed we could so satisfactorily account for the miscarriage of our work by attributing it to "incompatability," that to have this consolatory refuge knocked from under us is extremely disconcerting. Dr. Black's paper was published in May last. Up to this writing there has been no response. Are we all paralyzed? Is there no chance for squelching this modern disturber of Israel? Must we have forced down our throats the unpalatable charge that the failure of our operations is due to our own carelessness or incompetence? If so, Heaven save us from ourselves.

Dr. Black performed a series of experiments to determine the strength and elasticity of the teeth. It would appear from his statistics that the average stress required to crush blocks of human dentine eight-hundredths of an inch in cubic measurement, is two hundred and thirty-eight pounds. Also that such a block is strained or compressed two and nine-hundredths per cent. of its thickness by a stress of one hundred pounds, while with one hundred and fifty pounds, it is compressed four and three-hundredths per cent. of its thickness. When the stress is removed from living teeth, there is perfect recovery of form. There was a considerable difference in the resistance of the tissues of the different teeth. Of course, pulpless teeth withstood less pressure than living ones. If they were discolored they were yet weaker. Extracted teeth, that were dried, or desiccated, showed a great deal of shrinkage, and the dentine checked and split because of that drying. This is the reason why dried teeth are unfit for the technic work of colleges. But the sound portions of carious teeth, not devitalized, were as strong as sound teeth. Tendency to caries was no indication of structural weakness of the inorganic portion. Teeth are strongest in youth, or adult age, and grow weaker with advancing years.

The most important of the final conclusions of the article upon the physical characteristics of the teeth are as follows:

> Caries of the teeth is not dependent upon any condition of the tissues of the teeth, but on the conditions of their environment.
>
> There is no basis for the supposition that some teeth are too soft, or too poorly calcified, to bear filling with gold or other metal in use for that purpose, since all are found to be abundantly strong.
>
> There is no basis for the supposition that the teeth of children under the age of twelve years are too soft to receive metallic fillings.
>
> There is no basis for the selection and adaptation of filling materials to soft teeth, hard teeth, frail teeth, or poorly calcified teeth.
>
> With our present knowledge, the only basis for the selection and adaptation of filling materials is the operator's judgment as to which he can most perfectly manipulate.
>
> There is no basis for the supposition that pericemental inflammations, or pyorrhœa, attacks dense teeth any more than those less dense.
>
> There is no basis for the treatment of pregnant women medicinally with the view of preventing the softening of their own teeth, or for the production of better calcified teeth in their offspring.

There is enough in the above to fill all our pipes for a good long smoke, and it is to be hoped that the fumigation will soon begin.

The purpose was formed to epitomize more than one of Dr. Black's articles in this number, but it has been found impossible to condense them into such small compass.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The twelfth annual meeting of the National Association of Dental Faculties was held at the Ocean Hotel, Asbury Park, N. J., commencing Saturday, August 2, 1895; the president, Dr. Frank Abbott, in the chair. The entire membership of the association was represented at this meeting as follows:

University of California, Dental Department—L. L. Dunbar.
University of Denver, Dental Department—R. B. Weiser.
Columbian University, Dental Department—J. Hall Lewis.
National University, Dental Department—J. Roland Walton.
Southern Medical College, Dental Department—Frank Holland.
American College of Dental Surgery—Louis Ottofy.
Chicago College of Dental Surgery—Truman W. Brophy.
Northwestern College of Dental Surgery—J. A. Whipple.
Northwestern University Dental School—George H. Cushing.
Indiana Dental College—George Edwin Hunt.
University of Iowa, Dental Department—A. O. Hunt.
Louisville College of Dentistry—Francis Peabody.
Baltimore College of Dental Surgery—M. W. Foster.
University of Maryland, Dental Department—F. J. S. Gorgas.
Boston Dental College—J. A. Follett.
Harvard University, Dental Department—Thomas Fillebrown.
Dental College of the University of Michigan—J. Taft.
Detroit College of Medicine, Dental Department—G. S. Shattuck.
University of Minnesota, College of Dentistry—Thos. E. Weeks.
Kansas City Dental College—J. D. Patterson.
Western Dental College—D. J. McMillen.
Missouri Dental College—A. H. Fuller.
University of Buffalo, Dental Department—W. C. Barrett.
New York College of Dentistry—Frank Abbott.
Ohio College of Dental Surgery—H. A. Smith.
Western Reserve University, Dental Department—H. L. Ambler.
Pennsylvania College of Dental Surgery—C. N. Peirce.
Philadelphia Dental College—S. H. Guilford.
University of Pennsylvania, Dental Department—James Truman.
Meharry Medical School, Dental Department—G. W. Hubbard.
University of Tennessee, Dental Department—J. P. Gray.
Vanderbilt University, Dental Department—Henry W. Morgan.
Royal College of Dental Surgeons of Ontario—J. B. Willmott.

The following colleges were admitted to membership:

University College of Medicine, Dental Department, Richmond, Va.—L. M. Cowardin.

Atlanta Dental College—Wm. Crenshaw.

Birmingham Dental College—T. M. Allen.

Cincinnati College of Dental Surgery—G. S. Junkerman.

Cleveland University of Medicine and Surgery, Dental Department—S. B. Dewey.

The following, laid over under the rules from last year, were adopted as here given:

Resolved, That in view of the recommendation of the Executive Committee that this association now in session shall require that all colleges, members of this association, shall extend the term of the session of 1896–97, and of succeeding sessions, to not less than six months each;

Beginning with the session of 1895–96, no college shall be permitted to retain membership in this association if it is conducted or managed, in whole or in part, by any person or persons who do not practice dentistry in accordance with well recognized and generally accepted forms, generally known as dental ethics, or if they are owned in whole or part by men or women who are engaged in disreputable dental practice, or if any college have upon its list of trustees, the faculty, demonstrators, or in any other capacity, any one who does not practice dentistry in accordance with the principles above mentioned This shall refer to dentists only.

Beginning with the session of 1896–97 the examinations conducted by the colleges of this association shall be in the English language only.

The other resolutions which came over from last year for action were laid on the table.

A resolution was adopted requiring each college holding membership in the association to file with the secretary sixty days before the next meeting a detailed statement of its equipment and facilities for teaching; all new applicants to file a similar statement with their applications. The secretary was instructed to have blank forms printed for the purpose and forwarded to the various schools.

The report of the special committee on preliminary examinations was received and the committee discharged.

The following resolutions offered by Dr. Patterson were adopted:

Resolved, That students in attendance at colleges of this association are required to obey the laws regulating the practice of dentistry in the various States, and failing to do this, shall not again be received into any of the colleges of this association.

Resolved, That when a college of this association has increased the cost of tuition fees, no student shall be received at the former fee except those who have matriculated at such college prior to such action.

The Committee on Text-Books reported in favor of the adoption as text-books by the colleges of the association of two works, namely, "Dental Anatomy," by G. V. Black, M. D., D. D. S., and "Methods of Filling Teeth," by Rodrigues Ottolengui, M. D. S. The report was adopted.

The following lie over until next year:

Amendment to the rules offered by the Executive Committee:

That each college be allowed two delegates, and be limited to one vote for each school.

By Dr. Peabody:

That when a student who has matriculated within the time limit in any recognized college shall, from sickness, death or sickness in family, lack of funds, or other reasonable cause be compelled to retire from that college before the expiration of the term, he may be allowed to make up the deficit of time in the same or any other college (provided he enter at a date not later than that on which he retired), be examined by the last college entered, and if the examination be up to the requirements of that college, and otherwise satisfactory, may be given tickets for advanced standing or graduated, as the case may be.

By Dr. George Edwin Hunt:

Amend the last portion of Rule 3 to read as follows:

"Except on such conditions as would have been imposed in the original school, and these to be ascertained by conference with the school from whence he came."

By Dr. Gray:

Moved that when students from one college apply for advanced standing to any other college of this association, it shall be the duty of the Dean or Secretary of the latter college to ascertain by correspondence with the college from which the student comes if there be any objection to his acception.

By Dr. Gray:

Resolved, That all colleges of this association shall charge not less than one hundred dollars tuition each session.

By Dr. A. O. Hunt:

Resolved, That a student who is suspended or expelled for cause from any college of this association shall not be received by any other college during that current session.

In case the action of the first college is expulsion, the student shall not be given credit at any time for the course from which he was expelled.

Any college suspending any student shall at once notify all other members of this association of its action.

The following resolution, offered by Dr. Ottofy, was adopted:

Resolved, That the endorsement of applications for membership made during the coming year, shall be based upon the definite knowledge obtained by a careful examination of the methods of teaching, the equipment, and the efficiency of the Faculty.

The report of the committee on revision of the constitution, laws, and codified rules was considered section by section, and laid over for final action next year; and the committee, consisting of Drs. Louis Ottofy, A. O. Hunt, and J. D. Patterson, was continued.

The following were elected officers for the ensuing year: S. H. Guilford, president; George H. Cushing, vice-president; Louis Ottofy, secretary; Henry W. Morgan, treasurer; J. Taft, Thomas Fillebrown,

B. Holly Smith, executive committee; H. A. Smith, A. O. Hunt, and T. W. Brophy, ad interim committee.

The newly elected officers were installed and the president announced the standing committees as follows: J. A. Follett, L. L. Dunbar, George Edwin Hunt, C. N. Peirce, T. W. Brophy, committee on schools; J. D. Patterson, A. O. Hunt, J. B. Willmott, T. E. Weeks, and J. P. Gray, committee on text-books.

Adjourned to meet at the call of the Executive Committee.

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NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The thirteenth annual session of the National Association of Dental Examiners was held at Asbury Park, N. J., commencing Monday, August 5, 1895; the president, Dr. L. Ashley Faught, of Philadelphia, in the chair.

The following state boards were represented at the session:

Alabama—T. P. Whitby.
Delaware—C. R. Jefferis, D. M. Hitch.
Georgia—J. H. Coyle.
Iowa—J. T. Abbott.
Kentucky—H. B. Tileston.
Kansas—J. O. Houx.
Colorado—R. B. Weiser.
New Jersey—F. C. Barlow, Charles A. Meeker, George E. Adams, E. M. Beesley.
Pennsylvania—Louis Jack, W. E. Magill, L. Ashley Faught, Jesse C. Green.
Tennessee—F. A. Shotwell.
Virginia—J. Hall Moore.
District of Columbia—H. B. Noble, Williams Donnally.

The following boards were elected to membership:

Connecticut—George L. Parmele.
New York—William Carr.
New Hampshire—Edward B. Davis.

A resolution, offered by Dr. Barlow, requiring credentials to the association to bear the official seal of the state board making the application, was adopted.

A resolution offered by Dr. Donnally last year, and laid over, permitting persons who have been delegates to the association to be associate members without the right to vote or hold office was taken up and adopted.

Dr. Jack offered the following, which was adopted :

Resolved, That this body would express to the Association of Faculties the importance of an examination of the equipment, methods, and facilities of instruction of all the dental colleges of this country; it being understood that such examination is to be purely in the interest of higher educational standards and towards an approach to ultimate uniformity in the curriculum and methods of the schools, and more particularly to enable safe action to be made with respect to new schools.

Later, a communication was received from the secretary of the National Association of Dental Faculties, to the effect that the association had ordered the secretary to secure information from the various colleges regarding their equipment and general facilities for teaching; that this information would be systematized so as to be available at the next annual meeting of this body.

The following "plan of requirements for the recognition of dental schools," offered by Dr. Jack, was adopted, with a proviso that it shall apply only to colleges making application after the close of this session :

That each dental school which may in future come before this board for recognition, must have a teaching faculty composed as follows, to wit: at least three professors of dental subjects, namely, for operative dentistry, for dental prosthetics, for dental pathology and therapeutics. For the medical subjects there must be at least five professors, namely, for anatomy, for physiology, for chemistry, for pathology, and for materia medica.

Its students must also be taught the subjects of chemistry and bacteriology in laboratories adapted to the purpose, and under suitable instructors.

That such special schools must possess, in addition to suitable lecture-rooms, a well-appointed dental infirmary and a general prosthetic laboratory; also each school must be provided with a room or rooms suitable for manual training in operative dentistry, and must furnish in this way systematic instruction to its students.

All of these provisions are to be determined by careful inspection on the part of the Board of Examiners of the state within which is located the school, or other authorized body duly endorsed by this association. And upon the result of this examination may depend the question of reputability.

The following colleges were added to the list of recognized schools: Dental Department of the University of Denver, Denver. Col.; Department of Dentistry of Detroit College of Medicine, Detroit, Mich.; Dental Department of Western Reserve University, Cleveland, O.

Applications from the following were laid over one year: University of Buffalo, Dental Department; Atlanta Dental College; University College of Medicine, Dental Department, Richmond, Va.; Birmingham Dental College; Cincinnati College of Dental Surgery.

The Committee on Colleges in its report, which was presented by its chairman, Dr. Jack, expressed the view that more should be required to establish the right of dental schools to recognition by this body than good organization and the fulfillment of the rules of the Association of Faculties. Evidence should be furnished that the teachers are of high standing; that they require of their matriculates the stipulated preliminary training, and that they are carefully qualifying their students in every necessary direction. To ascertain these facts is a matter of difficulty. It is necessary, too, in addition to an ascertainment of the character of the faculties of any school, to discover the degree of confidence which has been developed in the minds of the local members of the profession.

The number of students in actual attendance in all the schools of the country for the session 1894–95, excluding those attending special courses, was 4,979, as against 3,997 at the previous session; graduates 1,208, as against 911.

The committee also expressed the conviction that it is becoming evident that the dental schools are increasing in number beyond the needs of the public, owing to the tendency of medical schools to inaugurate dental departments. The installation of dental departments in connection with medical schools is necessarily often incomplete, and therefore the committee believes that restrictions should be placed upon the rapid increase of inefficient dental colleges. As the practice of dentistry is largely based upon knowledge of chemistry and bacteriology, and as manual training has become an integral part of the curriculum of some of the better schools, we recommend that the association do not in future recognize any school unless satisfactory evidence is furnished that the students of such schools applying for recognition are being taught in modern chemical and bacteriological laboratories, and are also furnished with every convenience for manual training in prosthetic and operative dentistry, and that this latter mode of practical instruction is systematically carried on in at least the first year's course.

The committee also called attention to the importance of a higher standard of preliminary education, and to the impropriety of schools advertising as instructors practitioners who occasionally clinic before the students, but are not a part of the staff of the institution.

The report was adopted.

The following resolution, offered by Dr. Magill, was unanimously adopted:

> *Resolved*, That we will not in future consider favorably an application for recognition from any college which has as a member of its faculty one who also holds membership in the State Examining Board.

Dr. Donnally moved that final action shall not be taken on the application of any college until such application has been in the hands of the chairman of the Committee on Colleges for at least ten months. So ordered.

The following were elected officers for the ensuing year: J. T. Abbott, Manchester, Iowa, president; H. B. Noble, Washington, D. C., vice-president; Charles A. Meeker, Newark, N. J., secretary and treasurer.

Adjourned.

CORRESPONDENCE.

Editor Dental Practitioner and Advertiser:—I have not been in practice a great while, but it has been long enough to learn that if I would successfully combat oral diseases I must understand their etiology. There is one disturbed condition that I chance frequently to have met, and I must confess that I do not know what to do with it. In the lectures to which I listened while in college, the general field was covered, but the subject was never made entirely clear. I refer to the so-called erosions—conditions in which furrows are eaten or worn in the teeth, until, perhaps, they are very much weakened. I should be glad if you would give me the cause of this destruction. If you would print one of your characteristic editorials, taking that for a subject, I am sure that it would be read with interest, and might prove of great benefit to many another, who, like me, is A YOUNG PRACTITIONER.

[ANSWER.]

My Dear Doctor:—I have your letter, and it is a poser. "What is the cause of dental erosion?" Is that the easiest query you could put to me? Were the questions asked you at your final examination of that character? If that is the case, pray tell me how you came to graduate? I commend your thirst for knowledge, but if this query is a specimen of its intensity the ocean will not quench it. If you had demanded of me the exact nature of the infusoriæ of the cretaceous period, or had asked the etiology of the eruptions on the surface of the sun, and if they are eczemic in their character, or had wished to know the thickness of the shell of the cosmic egg, I might have given you an opinion as profound as those of the renowned Captain Jack Bunsby himself; but to ask what is the cause of the erosions of the teeth——well, well; what an idea you must have of my erudition.

But I can answer you all the same, and that without any hesitation. I think few men would give a clearer and more categorical answer upon such short notice. Here it is:—I DON'T KNOW.

Sometimes I think I do, and then again I am sure that I do not. The tooth brush sometimes causes it, but not always. I have seen erosions of the teeth of wild animals that are probably totally unacquainted with the use of the brush——unless the red fox is an exception to the rule. I have seen them between teeth where a brush could by no possibility reach. I have seen erosions in the shape of clearly-defined furrows with sharp edges, limiting a perfect "under-cut" in the body of the tooth. I have seen them longitudinal instead of transverse.

I do not care to offer a theory or to weave a web that will not hold water better than that. You know that at an examination into the cause of the "Goodwin sands," that scene of so many wrecks upon the English coast, an old man testified that in his opinion they were due to Tenterton steeple, because he could remember the time before the building of the steeple, and there were no Goodwin sands at that time.

There are certain pathological conditions that are usually found in cases of erosion, but those conditions are not entirely constant, and one exception is sufficient to overthrow the theory that erosion is caused by those disturbances. If it is a chemical solution due to the changed condition of the fluids of the mouth, surely all, or nearly all, surfaces of the tooth would be affected, and it would not be confined to a few teeth. There being a general disturbance of the oral secretions, and indeed a constitutional malady, all the teeth would be affected alike, except so far as circumstances were modified by local conditions, such as complete exposure to the changed fluids, or partial protection from their action. Besides, how could a distinct furrow be produced by a changed condition of the oral fluids, unless, indeed, their action could be limited to that one spot, and distributed evenly over that irregularly-formed and peculiarly-limited district?

Doubtless you have often seen the occluding surface of a molar tooth seemingly worn down considerably, but not evenly. There were deep depressions and pits, and in some extreme cases you may have observed that there were sharp outlines and edges limiting the borders of those seeming excavations. There were perhaps also sharp ridges and prominences. If you know anything whatever of comparative dental anatomy, it will remind you of the molar teeth of sheep, horses and other graminivorous animals. You will naturally jump at the conclusion that these are worn by the attrition of the opposite tooth, and that whenever there is a depression on a tooth in one jaw, there will be a prominence in the occluding tooth of the other. But if you will closely observe, or will take an accurate impression of both teeth, and then place their grinding surfaces in contact, you will discover that this is not the case. Two depressions will, perhaps, be in apposition. This will conclusively prove that the depressions are not the result of attrition, for one hole can not wear another, yet they bear the exact appearance of other erosions.

The cause can not, therefore, well be wholly a general or constitutional one, because if it were, it could not be so peculiarly local in its manifestation. It can not be entirely local, because if it were there would not be such a great and unaccountable diversity in its mode of manifestation. In other words, if it were internal, it must manifest itself more generally. If it were external, it would not be so generally manifested. Or, to put it in another way, if the cause were exogeneric, it would not have such inherent complications; while, if it were intraneous, there would not be the same exoteric phenomena. The exegibility of the case is not met by a corresponding sequence. The possible homology does not terminate in the desired homotopy of symptoms. The—the—, well, you comprehend that things don't just concatenate, whichever side of the fence you may go.——I may not be making myself exactly clear, but the fact is, my own mind is far from clear about the matter, anyway. But this I think I may fearlessly assert—if the cause of tooth erosion is exclusively external, it can not in the very nature of things be solely internal, and that lets me out of the hole into which I had fallen, and from which you, perhaps, imagined there was no escape.

The truth of the matter is, probably there are a number of factors concerned in the production of that which, when I commenced study, was termed "spontaneous abrasion." Chemical agents must play an important part. But we can not imagine a mineral acid existing in the mouth in sufficient strength to effect a solution of the lime salts of the tooth, without also inducing an inconvenient solution of the softer tissues. To be sure, the acid may be in the "nascent" state, concerning which the oral chemists of the old school used to talk in a very nascent manner, but that does not relieve the case of its embarrassment. If they are organic acids, we still do not escape the intransigent difficulty. How on earth can acids dissolve out tooth tissues in the fantastic way in which we sometimes observe erosions to occur, in the midst of the constant and violent watery currents that are forced between the teeth in all directions?

These erosions are not induced by the acids of organic fermentation, for they do not present the distinguishing characteristics of the action of the fungi. What kind of an acid then can it be? It would seem that it must be one produced by disturbed inorganic or digestive ferments—and at last I have reached one spot of apparently dry land in the midst of this quagmire of doubt and seeming irreconcilabilities. I have not the time or data to examine into the truth of this hypothesis at the present time, nor am I a sufficiently practical analytical chemist exactly to determine what the possible changes are, but you have my full permission to make any studies in this department that may suggest themselves to your mind. Surely, here is an opportunity for you to indulge your propensity for asking tough questions, and you may propound them to yourself—and then frame your own answers.

That there is a degenerated condition of some of the secretions of the mouth, in at least many cases of erosion, is indisputable. This seems to be especially the case with the mucous follicles, which are somewhat specialized at the gingivæ. What that pathological change may consist of, you can easily find out—if you know how to do it. That some of the erosions are due to attrition and wear, is certain; just what proportion is another question that you might ask at the fountain-head of all actual knowledge—observation and experiment. When you find it out, please let me know also.

THE DENTAL PRACTITIONER

AND ADVERTISER.

DR. W. C. BARRETT, ... EDITOR.

BUFFALO, N. Y., OCTOBER, 1895.

THE ATTACKS UPON THE COLLEGES.

The time seems to be approaching when those connected with our schools can not, consistently with self-respect, attend dental meetings. They constantly hear themselves accused of dishonesty, rapacity and greed, and at almost every meeting of importance are charged with general reprehensible conduct in the administration of that which is committed to their trust. Usually these charges are made by those who have no acquaintance with the manner in which the colleges are conducted. In the great majority of instances, the accusers are men who never took a college course in their lives, or if they did, it was away back in the days when our schools were in their infancy, and before it had been possible for them to develop into what they are to-day. The most bitter of these traducers are too frequently men who are under obligations to the schools for honorary degrees, the only professional titles which they have, and who proudly wear the distinctions conferred by the hands which they turn and rend.

At the late meeting of the American Dental Association, however, a most venomous attack was made by a man who was formerly connected with a college, and who bears a number of college titles, which should imply that he has a more complete knowledge of college matters than his remarks would seem to indicate. Dr. L. D. Shepard, of Boston, spoke as follows:

> "There is not a dental college in this country but is practically telling falsehoods all the time. The impression is given out, if not explicitly stated, that the fees charged in the infirmary are to cover the cost of material. * * It is a downright falsehood, whether expressed or implied. * * * A college which presents to the public the idea that the services are gratuitous, for the benefit of the public or the education of the students, and which charges five cents for an oxyphosphate or an amalgam filling, overcharges from the cost of the material, and the bal-

ance goes to the profit side. * * * One college charged seventy-five cents a sheet for the gold filling, and this college, to make its infirmary more profitable, served out No. 3 foil, instead of No. 4, because it was cheaper. * * * *

For some years I have been an advocate of an answer to the question of why, in the minds of liberally-educated people, particularly physicians and people most familiar with eleemosynary labors, we have not had granted to us the rank we claim, either as a liberal profession or a specialty of medicine? The great reason why that has not been done is that, in the line of thought in connection with medical services, we are not a liberal profession. Where in this country can you point to a dental hospital, pure and simple? There is not one. Look over the list of 25,000 dentists, and how many are giving up even half a day per week for the service of the poor? You can count them on your fingers."

Dr. Shepard is an extensive holder of honorary degrees from these same institutions which he so anathematizes, unless he is very generally belied. How can he consistently make use of these titles derived from sources so dishonest and discreditable? He was formerly connected with a dental college. This is necessarily included in his anathematized list. If he is sincere in his belief, he should clear his own skirts by abandoning everything that might seem like complicity in such damnable cheating.

The remarks of this gentleman concerning hospitals would indicate that his knowledge of them is not a very intimate one. Medical hospitals always make a charge—usually so much per week—for care and attendance, and this must either be paid by the patient, through endowments, or by some special gratuities. Infirmaries usually give the services of the attending physicians, but make a charge for medicines sufficient to cover the necessary expenses of their maintenance. The only exceptions are in instances in which such institutions receive grants from city or other authorities, or which are maintained by donations from charitable people. All infirmaries and hospitals must be self-supporting, so far as their running expenses go, unless they are supported by the public. The writer of this is a member of a regular hospital staff, and he knows whereof he affirms, so far as the hospitals of one city are concerned.

But the latter part of his remarkable speech opens up a train of thought that it will be well to pursue a little farther. He says that one can count upon his fingers the dentists who give any considerable portion of their time to the service of the poor. He charges that we are not a profession, because we do no eleemosynary work. There is not a man who is prominently connected with any dental college in the land, who is not actively engaged in charitable professional work. How much of his time does Dr. Shepard give in that way? How much time is given by almost anyone outside the colleges? The truth of the matter is, that nearly or quite all the work for the poor that is done, is at the infirmaries of the colleges.

And yet, Dr. Shepard broadly condemns the only class of men who, according to his own showing, are doing anything whatever to make of dentistry a profession.

Let us look into this matter a little in the calm light of reason. Dr. Shepard claims that some colleges are making large sums from their infirmaries. It is probable that a very few of them may be able to show—not a large sum—but some balance, on the credit side. The great majority of schools find their infirmaries a burthen, so far as revenue from them is concerned. The writer personally knows of one that has a good infirmary practice, and which showed a balance during the past year of one thousand dollars on the wrong side of the ledger, and even then it was not charged with its proportionate share of rent, and heat, and janitor's service, all of which should be a part of its legitimate expenses. Probably there are not five colleges in existence that would not gladly give the whole receipts of their infirmaries to any one who would pay their legitimate expenses.

Does this or any other calumniator of the schools know of a college that turns away from its doors any poor person who desires dental services? If any one does, let him at once publicly make the charges, and he will have the thanks of every good college teacher. The comparison of dental infirmaries is made with those of medicine. Do any of the men who make these accusations know any dental infirmary that makes a charge to the worthy poor for such services as are rendered by physicians gratuitously? We repeat that all medical infirmaries make a small charge for the remedies used, or for the packages in which they are put up, except such as receive city or other grants of money for their work. No dental infirmary receives any such assistance, although it is common in the different branches of medicine. Medical infirmaries make the same charges that dental infirmaries do, when they have no outside assistance to depend upon. Dental infirmaries do not give away gold, or silver, or valuable material, because there is no fund to provide it, and to do so is beyond their power.

Gold fillings are not included in the list of charitable gifts. People who demand gold in their teeth are supposed to be able to pay for it. Charitable surgical infirmaries will cut off a man's leg for sweet charity's sake, but they do not furnish him with an artificial substitute, even in hospitals which are supported by the public. What dental infirmary makes a charge for extracting teeth? What school brings in a bill for treatment of any kind? What college demands any remuneration whatever for personal services rendered? If any such there are, they are beyond the knowledge of the present writer. They do make a charge for material furnished, precisely as do medical infirmaries unsupported by the public.

But this reckless reviler—and we have only selected him as a type of a class, because in a peculiarly public and offensive manner he has placed himself upon record—says that the infirmary which charges five cents for a cement or amalgam filling, makes an overcharge. This is very speciously and unfairly put. He knows that the cost of the mere material forms but a small proportion of the necessary expenses. There are the items of rent, of fires, and the maintenance of the rooms, which are legitimately to be charged to the infirmary. There are the expenses of providing chairs and instruments, rubber dam, and a hundred other little things, a definite proportion of which must be charged against every paid filling inserted. Attendants must be paid, and the constant waste of material must be compensated. Then there is the material used for real charitable cases, from which nothing whatever is received. All these expenses must be met, and the infirmary has no fund to fall back upon, no public moneys to receive, no bequests from wealthy and well-disposed people. Just such inconsiderate charges as those brought by Dr. Shepard forestall the possibility of such things as that. People will not give money to institutions which are charged with rapacity, even though the unworthy motive that prompts the accusation should be patent to all.

If Dr. Shepard, and men inspired by the same idea, would remove the reproach which they aver rests upon dentistry because of the lack of charitable work, and would give of their means, provided they are unwilling to devote their time, charitable work could be more readily undertaken. How much has Dr. Shepard given annually to this work? How much will he give annually in the future—for donations of this kind must not be spasmodic? Infirmaries can not be sustained unless benefactions are continued. All that has been done in the past has been by the colleges and the men connected with them, and in this respect there is not a man prominently connected with a college who does not give a considerable proportion of his time to genuine charitable work. He must do so if his school is to live. He does not even receive indirect pay for it. He does it because he finds a field for charitable work, and he is enough of a professional man to devote himself to it. If he is not, he can not long retain a place in a college. What does Dr. Shepard imagine would be the amount of the fees received if men like Garretson, Brophy, Marshall, Cryer and many others, obtained pay for all their surgical work? There is scarcely a hospital in the land, in cities in which there are dental schools, which has not upon its staff dentists who render a great deal of gratuitous service. And shall they receive only vituperation for their good deeds? Out upon the man who will not give credit when credit is due. Confusion to the dirty birds which foul their own nests. Dishonor to the men who malign the profession to which they belong, and who should every day of their lives thank God that they are permitted to be enrolled in the list of dentists, than whom no more honorable or charitable body, as a whole, exists upon this earth.

Five cents would be an overcharge for the material used in an amalgan filling, would it? Then what shall be said of the man who charges rich and poor alike five dollars for such a filling? He may urge that he does not pretend to work for charity; but has he no bowels of compassion whatever, when people of moderate means are in his chair? Surely he might at least have charitable feelings toward struggling institutions that charge twenty or twenty-five cents for the same.

The college infirmaries are often imposed upon by people who are able to pay fair fees, and for whose benefit they were never intended. Instances are common in which even wealthy people have put on working clothing and sought the infirmary, because they thought they could get good services, and get them for almost nothing. Dentists often complain with justice that the infirmaries get patients who should go to private practitioners. When such are detected, it is common in the schools to charge them a heavy fee, and when they grumble, as growl they will, to inform them that when people who are able to pay go to the institutions intended for the poor, they are expected to pay for those who can pay nothing themselves. No infirmary conducted by honorable men desires such patients; but it is impossible at times to prevent being imposed upon. If any one will inform colleges how they can prevent this, they will be only too glad to learn.

When such reckless and false charges are made as were shamelessly brought against the colleges in the New Jersey State Dental Meeting, and in that of the American Dental Association this summer, and as are continually being urged by men who can by no possibility be acquainted with the facts, it is time that a halt was called. There were no exceptions made, but all were included in the same category. Is it true that men who are spotless in every walk in life, who are held in honor by all classes, who have, perhaps, for many years gone in and out before the profession and the world blamelessly, is it necessarily the case that upon their joining a college faculty they lose all sense of honor? Are the best men in the profession scoundrels, and liars, and cheats, because they are teachers? Are Taft, and Cushing, and Black, and Gorgas, and Hunt, and Smith, and Truman, and Peirce, and Morgan, with the late Winder, and Eames, and Chandler, all swindlers? Yet that is the sense of the miserable libels that are periodically hurled against the colleges. No man believes these things. The very caluminators themselves can not have any faith in their own words. It is time that these things should cease, if we are to retain the respect of the world. The reputation of the profession in a large degree is dependent upon our colleges. They should be sustained and applauded for the good they do, instead of being hindered and embarrassed by the miserable slanders that emanate from jealous sources. If they are to continue, who can blame the college men if they raise the cry "To your tents, O Israel," and refuse to sit in meetings where such falsehoods are continually repeated with impunity.

THE PROFESSIONAL ANNIVERSARIES.

The national meetings for 1895 were not an unqualified success. Asbury Park proved itself to be about the most unsatisfactory point that the American Dental Association has ever visited. This is no discredit to the place itself, but it is illy adapted to the wants of our meetings. The usual social enjoyment was almost totally lacking for a consideral portion of the members. There are more than a hundred hotels at the Park, and it was with extreme difficulty that accommodations could be secured at any of them, and some members paraded the streets for hours before they could secure an abiding place. No arrangements had been made for the entertainment of the members, and some of those who had taken the trouble to write for rooms in advance found that it had not been attended to, and they were no better off than the others. No one knew where to find any one else, and so the social feature was largely eliminated.

There was a good attendance upon the A. D. A., but owing to the unfortunate illness of the president, there was no responsible head, and business dragged unconscionably. Two days were spent in the consideration of two sections, and even then they were not entirely finished. This practically left but one day for the papers and discussions of the remaining sections. Members who had been at considerable pains to prepare papers became convinced that their sections would not be reached at all, or at the best that their contributions could not receive proper attention, and so preforce they withdrew them. It was, as anticipated, a mere scramble at the close, and sections were practically passed without consideration. This should be amended another year, for it is but poor encouragement to the chairman of a section when his report can not receive the attention which is its due.

Much important business was, however, transacted in a kind of haphazard way, and some excellent papers were read, while all resolved that another year some of the mistakes of 1895 should be corrected. Saratoga was selected as the next place of meeting. This was hardly in a line with a contemplated and hoped-for improvement, because some of the same reasons why Asbury Park is unsuitable for a place of meeting apply to Saratoga. We have met there a number of times, and usually have come away measurably disappointed.

Dr. Crawford was re-elected president. This result was due to a number of causes. In the first place, a great deal of sympathy was felt for him in the serious illness which prevented his attendance upon any but the first session. Then, too, a refuge from the politicians was sought. The work of setting up the wires for the election was begun last year, at Old Point Comfort, and the knowledge of that fact was quite enough to kill the candidate in whose interest the agitation was commenced. It was plain, before the meeting convened, that the Association would have nothing for a man for whom political wires were being pulled, however estimable he might be, and however well he might otherwise deserve, and how highly adorn the office of president.

Then the politicians settled on another most excellent man, and the knowledge that he was thus entered in the race killed him. So the Association finally was forced to do what it had never yet done—re-elect a president who already had received all the honor that the office could confer.

The National Association of Dental Faculties had a profitable meeting, and transacted a great deal of business. It was voted that the terms of all colleges should be extended to seven months, but the next day this action was reconsidered, and the term made six months, in deference to the wishes of two or three schools, who would find it impracticable to lengthen their term on such short notice. It was fully understood, however, that the minimum accepted term will, within a very short time, be extended to seven months.

Permission to grant an honorary degree was granted to one school, but for the sake of harmony the petitioning college afterward asked to withdraw the request, and this was granted. It would seem that the principle of retaining the control of the issuance of these dental degrees should be retained within the Association of College Faculties, to be granted whenever sufficient cause for the conferring of this honor can be shown.

The necessity for practical instruction in anatomy was again insisted upon, and the rule that no student should be graduated without having dissected was vindicated. The schools that have heretofore insisted that it was impossible for them to comply with the law, have practically acknowledged that they were mistaken, and have engaged their honor that, for the future, they will come to the standard, and cease the infraction of one of the fundamental rules of the Association.

The National Association of Dental Examiners transacted a great deal of business, and for the first time in many years the State of New York was represented in the board. The change in the New York State law, and the abandonment of the practice of conferring a special State degree, has made this practicable and possible. The report of the meeting will be found in this number.

The National Dental Technic Association made a most astonishing exhibition. Some of the work was a revelation to the old-time teachers. The Association was unfortunate in not being able to secure a place of meeting anywhere at Asbury Park, so they attempted to hold sessions between those of the American Dental Association, and in the very midst of the circus which the auditorium most resembled. Ropes were strung to fence off one corner of that babel of confusion, but no one paid any attention to the barriers, and the consequence was that not twenty persons could hear the papers that were read, or take part in the discussions. It is to be hoped that the American Dental Association will never again meet in a room that presents the appearance that the one of this year did. It looked like a county agricultural fair. It is further to be hoped that next year the Dental Technic Association will be accorded some privileges, and that it will be able to secure a room in which to hold its meetings. Its work is of far too great importance to be ignored, and it does not require much of a prophet to foretell that the time is near at hand when it will receive a large share of attention at our annual convocations, if it keeps on in the road that it has marked out for itself.

Each year the time for these annual meetings becomes more and more an era in dentistry. The importance of the work done can not be exaggerated. The influence of our annual convocations upon the profession at large is a wholesome one, and tends to the elevation of professional standards. All of us desire to see their usefulness increased, and to witness a better attendance. And each year the lovers of the associations, and of the profession, are able to mark a step in advance. We are yet far from the ideal which many men have, but we are approaching it. When those who have no other purpose in attending the meetings than to pull the wires and secure the election of some special men to office are entirely relegated to the rear, and the members can approach an election without being button-holed and bored in the interest of candidates who would obtain an honor without having fairly earned it, then we may expect to see the scientific work accorded a prominence which, while it is far greater than it was a decade ago, is yet not what the true friends of progress desire it to have.

THE EDUCATIONAL QUESTION.

Dentistry in America can never be what it is in other countries. The very nature of our government and the genius of our institutions forbid the modeling of any profession into one consolidated, concordant whole. We have nearly fifty separate States, each with its distinct autonomy; each supreme in the management of its internal and domestic affairs, and each with its separate interests and environments. It is probable that no other form of government could preserve harmony among so many and such diversified conditions. That which would conduce to the best good of the comparatively dense population and the manufacturing regions of the Eastern States, might be but illy adapted to the wide prairies and the agriculturists of the West. Hence it is folly to look for such unanimity of purpose and harmony in methods as may easily be brought about in countries like England.

But that there should be such a wide diversity in the conduct of professional affairs as exists in different States of the Union to-day, is quite unnecessary. To secure a better condition should be the desire of every professional man. This can only be done by systematizing our educational methods. In some of the States there is practically no restriction in the number, or regulation in the methods, of professional schools. All that is necessary is for a few men formally to incorporate themselves under general laws, when they may open a college, and grant diplomas and confer degrees without any supervision whatever. As long as this is the case, the profession in other States, whose schools must comply with strict regulations, can not be expected to accept their cheap distinctions without question. Hence the enactment of laws, passed at the instigation of members of the profession, subjecting the graduates of even the best colleges to an examination by boards which are sometimes composed of men totally unqualified for the task. In the State of New York, no new school that confers degrees can be chartered without first actually raising the sum of fifty thousand dollars in cash for its proper equipment. In some of the Western States it costs but five dollars, the fee for issuing the permit.

All dental legislation should, in our opinion, commence with the proper regulation of edu¢ational methods. Let us briefly state what is the system adopted by the State of New York, and which presents many advantages. All institutions of learning, above the common schools of the State, are under the direction and control of the University of the State of New York. This is not a teaching body at all, but a federation of high schools and colleges, its work being supervisory and governmental. The power is vested in a Board of nineteen Regents, appointed by the Legislature for life, and serving without pay. No degrees can be conferred without their authority, and they may charter or annul the charters of any high school or college. They determine the requirements for entrance to any educational institution above the common schools, and the qualifications for graduation. All examinations for either are conducted by them, at such places and times and under such restrictions as they may determine. These Regent examinations give a uniform and impartial standard, applicable to all circumstances. Under their authority the professional schools instruct and confer diplomas, but do not license to practice. Medical schools, for instance, may confer the degree of Doctor of Medicine, but that does not carry with it the right to enter upon practice. That privilege is only given by the Board of Regents, who appoint examining boards, before whom all graduates, of whatever schools, must appear for examination. This removes from the colleges any temptation to graduate incompetent men, for they know that such students can not pass the final crucial test, and their rejection is a reproach to the college.

The Board of Regents are now about placing dentistry under the same regulations. No one will, in future, be permitted to enter a dental college in the State of New York, without the possession of a Regents' certificate of the same grade as that for medicine. The course must be the same, three annual terms of at least seven months each, and the same requirements are demanded for graduation, while the Regents alone can license to practice. The board thus retains full control of the education of all dentists of the State, because it will not admit to an examination for a license to practice the graduate of any school, whether in or out of the State, that does not maintain the same standard for both matriculation and graduation. This places dentistry on the same plane with medicine, and in the eye of the law and the community it has precisely the same professional standing.

We have a definite, unbending standard of requirements for matriculation, and one that can not be varied at the will of college authorities. They have nothing to do with receiving students, except to admit only those whom the Regents declare qualified, and they can not launch upon the community imperfectly-trained men. It would seem that this system presents advantages that none other does, for it binds the hands of college authorities, who might be disposed to relax proper requirements.

PRE-HISTORIC DENTISTRY.

At regularly recurring intervals we read that the Egyptians and other ancient people filled the teeth with gold. Some one sees this, and without any inquiry as to the truth of the assertion, or whether it is substantiated by anyone who has positive expert knowledge concerning it, he passes it on by again placing it on record. The truth of the matter is, the dentistry that existed before Christ consisted mainly in fastening loose teeth with ligatures or wire, and occasionally inserting other human or animal teeth by the same means. There has never been presented an instance of the insertion of a filling for prophylactic or curative purposes, that dates back as many decades as is sometimes claimed centuries by those who are ignorant of the facts. It would be well if our journalistic editors made a note of this matter, and corrected the manifest errors that are afloat in popular and unintelligent circles.

THE DENTAL PROTECTIVE ASSOCIATION.

Meetings of the members of the Dental Protective Association were held at Asbury Park during the anniversary week in August. The exact status was laid before them by Dr. Crouse, and their advice as to the course to be pursued in the future was asked. It was decided that it was not best, under the existing circumstances, to use for purposes of defense the amount now invested on bond and mortgage, as that should be retained for emergencies, and to ensure the perpetuation of the Association. Yet the statement of Dr. Crouse, confirmed by the books and papers exhibited, showed that if this security fund is to be kept intact, more money must in some way be obtained. Various schemes for accomplishing this were proposed by different members.

All agreed that the most equitable way was to increase the membership. A comparative few of the profession are carrying the rest along, and securing for them protection from the rapacity of patent-holders. What is more, a considerable number of those who are doing the paying are not of the men who need protection themselves. They are doing what they do for the good of their profession——and incidentally, in many cases, receiving nothing but ill-natured criticism from those who will not assist in protecting themselves. They are naturally getting tired of doing this, and demand that a larger number shall pay their proportion of the great expense of defending the suits all over the United States. It was proposed that the name of every member of the Dental Protective Association be published, and that protection be withdrawn from all others. This, of course, would at once subject the non-members to the liability of suits from the proprietors of patents. The objection to this course is, that it would enable the patent-owners to pile up a lot of decisions against men who were not properly defended, and this would give them a standing in court, which it is not desirable that they should obtain. This objection was met by the declaration that any such decision so obtained would be at once swept away, when the testimony which the Protective Association has gathered was brought into court through suits against any of its members.

Another proposition was, that an assessment should be levied against the present members, which the Association has a perfect right to do. This was met by the declaration that it is unjust to make those who have so far borne the expenses of the Association contribute further, until a greater number of dentists pay their first membership fees.

It was proposed that a full statement of the exact condition of the Association be published, with an account of the receipts and expenditures from the organization. Dr. Crouse expressed a willingness to do this if it was thought advisable, but in the opinion of a majority of those who attended the meeting this was inexpedient, as it would give the opposite side too complete knowledge of the steps taken and to be taken by the defense. The lawyers employed by the Association strenuously objected to this course, and it was abandoned as unfeasible.

It was finally recommended that such a statement should be submitted to a considerable number of representative men in the profession, and that it should be verified by reference to the books of the Association, and that then a circular of appeal should be issued and signed by these men, and thus an effort made to raise the membership. If this did not succeed, the only resource would be an assessment.

It is a shame to the profession that any such course should be found necessary. The matter so directly appeals to the interests of every dentist, that one would think that if there is any honor among them, the Protective Association would be overwhelmed in the rush to secure membership. It is such a piece of petty meanness for any one to receive the benefits without an attempt to assist in the protective work, that one can not conceive how any man with the least spark of honor should continue to exist at the expense of his fellows. If they would admit that they are objects of charity, some consideration might be due them, but such men resent with indignation the charge that they do not pay their own bills. Out of the eighteen hundred dentists in the State of New York, there are four hundred and fifty-seven who are members of the Dental Protective Association. To come a little nearer home, in the City of Buffalo, with one hundred and fifty dentists, sixteen alone have paid their membership fees, and the rest have immunity from prosecution through the grace of the bounty of these men. Will the other honorable members of the profession in the City of Buffalo continue to rest under this stigma? We are describing the actual conditions in very plain terms, but that is the absolute truth of the matter. Dr. Crouse has given a great deal of valuable time to this business. His books and all the details of the management of the Protective Association have been laid before a considerable body of the representative men of the profession, and they certify that everything has been conducted in a spirit of economy, and that not a cent of the money received has been diverted to any improper purpose. They further declare that it is perfectly apparent that more money must be forthcoming for the legitimate expenses of the Association, and that without it protection cannot be maintained. They declare that in their opinion the objects of the Association can be secured in the future as in the past, if it is sustained. They unanimously certify that it is inexpedient and unwise to withdraw the funds now invested, and they will appeal for an increase of the membership. Shall they be sustained? Let every dentist consider that this question is personally asked of him, and let his response be made to Dr. J. N. Crouse, 2231 Prairie Ave., Chicago, Ill., or to whoever the committee of the Association shall designate.

CACHETIC CONDITIONS.

Heitzman, Bödecker, and Black, seem to be heartily in accord in their estimate of the pre-disposing causes of dental caries. The latter shows that there is comparatively little difference in the mineral structure of the same teeth in different individuals, and he asserts that the inherent weakness in teeth, which invites the ravages of disease, must be in the organic structure. Heitzman and Bödecker, in the August number of the *Dental Cosmos*, assert that the resistance power of tissues to diseased or pathological conditions, must depend largely upon their organic structure. Observations show that in human and animal embryos, (more especially in the human), certain tissues at different stages of growth and in different individuals present widely varying conditions.

In the lower jaw, for instance, at the sixth or eighth week, the trabeculæ of the bone should show a certain stage of formation, and present certain microscopical characteristics. But they have observed that in some specimens the bone is but little advanced, and the general formation of the osseous tissues show that the biological influences, the vital organizing forces, were weak, and as a consequence not only were the tissues but little advanced, but their organization was imperfect. Such tissues must present a pre-disposition to pathological conditions.

BIBLIOGRAPHICAL.

WORLD'S HISTORY AND REVIEW OF DENTISTRY. Edited, compiled and revised, by Herman Lennmalm, D. D. S. Chicago: W. B. Conkey Co., Publishers, 1895.

This is an exceedingly valuable book of reference. It contains a condensed history of dentistry in America, and copies of the legislative enactments for the regulation of dental practice in the different States; lists of the dental colleges of America; lists of the dental societies, of the dental journals, the number of dentists in the different States, with much more of general information.

In addition, there are the dental acts of Ontario, Quebec, Nova Scotia, New Brunswick, Manitoba, British Columbia and Prince Edward Island.

There is an abstract of the status of dentistry in Mexico, British Honduras, Costa Rica, Guatemala, Honduras, Nicaraugua, and the Republic of Salvador, of the Central American States.

There are statements from the Bahama Islands, Barbados, Bermuda, Cuba, Curacao, Hayti, Jamaica, the Leeward Islands, Martinique, Puerto Rico, St. Bartholomew, St. Thomas, and Trinidad, of the West Indies.

The condition of dentistry in all the countries of South America is given, with abstracts of the laws, where such exist. Twenty-three countries of Europe, thirteen of Africa, fifteen of Asia and ten of Australasia are included, and statements and facts from each are given, with epitomes of the legislation affecting dentistry, where there is such.

It will thus be seen that the book contains a great deal of valuable information. The author deserves much credit for his perseverance in obtaining these facts, for sometimes his only original source was the American consul at the principal place in the country, and occasionally even this failed him.

METHODEN UND NEUERUNGEN AUF DEM GEBIETE DER ZAHNHEILKUNDE. Von Wilh. Herbst; Zahnarzt in Bremen. Dr. *hon causa* (Ohio Dental College). Inhaber der goldenen Medaille (Ehrenpreis) des Centralvereins deutscher Zahnärzte. Verlag, Odontologische Verlagsanstalt: Berlin.

This book is a description of methods, inventions and devices, mostly original with the author. From the standpoint of mechanical practicability it possesses a great deal of value, although it is frequently at variance with scientific principles.

The first part is devoted to an exposition of the filling of teeth by the rotation (Herbst) method, with descriptions of the instruments and devices necessary for the purpose. Although few operators in this country have adopted these methods, a study of them will be beneficial to every dentist, and they are made easily comprehensible in this book.

The author still clings to his cobalt method of treating exposed pulps, but he now calls his preparation by its proper name—metallic (white) arsenic. His practice was severely criticised when first published here, and has never been accepted. He seems to claim that it has been endorsed by Dr. Bödecker, of New York, but the latter in his book, "The Anatomy and Pathology of the Teeth," says: "I would advise to remove the pulps from the roots which we know can be prepared readily, and treat them in the manner we have been accustomed to, but to amputate and cap the others."

Dr. Herbst gives his methods with amalgam, gutta-percha, glass-fillings, cement in combination with gold linings, the application of ligatures around implanted teeth, gold bands around teeth in cases of pericementitis, hemorrhage after extraction, polishing rough teeth, and he describes a nitrous oxide apparatus with a water valve.

The second part is devoted to crown and bridge work, and the preparation of gold plate, wire and solder.

The third part is characteristically Herbst. He describes the making of many kinds of instruments and devices, and gives directions for overcoming many of the difficulties that arise in daily practice. Those who met Dr. Herbst when he was in this country, will remember his exhibit of inventions, shown at dental meetings. These are explained, and their construction described.

The book is beautifully printed on heavy paper, is handsomely bound, and illustrated with 283 well-engraved cuts. We are informed that an English translation is now being made, and that it will appear early in the coming year.

GENERAL SURGERY AND PATHOLOGY FOR DENTISTS. By Edmund W. Roughton, B. S., M. D., F. R. C. S., (Eng.) With numerous original illustrations. London: J. P. Segg & Co. Philadelphia: S. S. White Dental Manufacturing Co., 1895.

There is much to commend in this volume of one hundred and thirty pages, and much to criticise. Its scope is defined by its title, "General" Surgery and Pathology. While there is something of each for dentists, it is by no means a work on "Dental" Surgery and Pathology. The subjects of which it treats are approached from the general medical standpoint, and not from that of our practice. Hence, it can not be accepted as a text-book in either Dental Surgery or Pathology.

Nor is any subject considered with sufficient of comprehensiveness to give a student a clear idea of either its surgery or pathology. For instance, the whole matter of general inflammation is disposed of in about six pages, and but fifteen are devoted to the general subject and its various separate forms and terminations. Twelve pages are given up to bacteria, and eight to wounds. Of course it is impossible, even superficially, to consider these great studies in such limited compass.

There are many of the statements to which we should take exceptions. For instance, it is said that "dental caries is nothing more or less than the devouring of the teeth by bacteria of the mouth." This is certainly misleading to the young student, and gives him the impression—much too common among practitioners—that these fungi are ravenous and ravaging organisms, inspired with a fell purpose. They do not "devour," any more than does a cabbage, or a fern. There are other such unfortunate expressions which we need not particularize.

But while this is not a book on dentistry, or a work on dental surgery or pathology, there is much matter within its pages that will prove of value to dentists. Probably they are not so much interested in the treatment of syphilis, tuberculosis, myelitis, phlebitis, and general tumors; yet they should know something of all these diseases, and this book gives a limited amount of information within a small compass.

The average dentist is unable or unwilling to keep a comparatively large library of medical books, and even if this is not the case he does not usually find the time to read and study them. Works of this kind must supply the wants of a great many, and to this end the book under notice may perhaps serve an excellent purpose, and prove in libraries of a moderate size a useful substitute for more complete text-books.

CURRENT NEWS AND EXCERPTS.

THE INDEPENDENT ORDER OF GOOD-FELLOWS.

There was one meeting at Asbury Park last summer, that was a success without any qualification whatever. It was that of "The Chutmuck Club." Don't know what the Chutmuck Club is? That shows how sadly your social education has been neglected. It is an agglomeration of good fellows, who meet for the strictly scientific purpose of promoting good fellowship. It had its origin in the Mississippi Valley Medical Association, but its beneficent influences bid fair to be extended through all the land. It met at the Hotel Columbia, at 11 o'clock one night, for it is peculiarly a nocturnal affair. The place of meeting was the dining-room, and the principal paraphernalia was a well-set dinner-table. The meeting was a secret one—or as secret as the open doors and windows, with their admiring spectators, would permit.

There were about a dozen original Chutmucks, and they issued the following card to about twenty-five other good-fellows:

Dear Doctor—You are proposed for membership in the Chutmuck Club, which lifts the veil that shrouds the Geus-Urma, at 11 o'clock, in the private dining-room of the Hotel Columbia.. Please report with liquidating fee to

"De Muck Who Takes de Dough."

The receivers of the card reported and liquidated. Then commenced the agony. The first course of the generous menu was served, when the High Muck-a-Muck arose and said:

"There is a beautiful story in the tradition of ancient Iran. It is the myth of Armati and the Geus-Urma. Armati was the earth, and had a soul—the Geus-Urma. Man, coming to put seed into the ground, tore the breast of Armati with his plow. Then the Geus-Urma cried out in anguish to the high Powers above to defend Armati from her ravishers. But not the good Sraosha, and not the mighty Ormuzd, would listen to the wail, or stop the cruel work of the plowman. Armati, wounded by the harsh harrow and the sharp share, was left to suffer and to moan in pain, but in recompense for her sorrow was given the flowers, and the fruits, and the waving grain, to hide the scars left upon her bosom.

"With us, thought is a plowshare, and sorrowful is the Geus-Urma that now weeps in the world of letters. As Chutmucks we have no head, no dictator, no ritual, no text of orthodoxy, no rigid worship. Our creed, our rule of action is this:

"Those who do not know, and do not know that they do not know, these are fools; leave them. Those who do not know, and know that they do not know, these are children; teach them. Those who know, and do not know that they know, these are asleep; arouse them. Those who know, and know that they know, these are wise; follow them.

"To establish the common ground of fellow-workers, let us now assume the honest humility and simple garb of the plowman, who presses the breast of Armati that flowers and fruits and waving grain may testify to her fecundity."

It would be a violation of the rules of the order to relate the awful things done until the next course was served. This in turn was succeeded by ceremonies too painful to describe. Speeches formed part of the order of exercises, and some of them were too deeply inspired and too redolent of the spirit of the occasion to be now repeated. No faithful Chutmuck would so far forget his obligation as to reveal the secrets of that convivial occasion. If he would, it is certain that there was not one present who could give a connected account of what even he himself said, if he were one of the speakers. It would be a far easier task to tell what some of them did not say. Let it suffice that the marching was of a differential character—if we exclude that in the cake walk—while the gymnastics would have done honor to Daniel Lambert.

The Chutmucks are capable of a world of good, if they can be prevailed upon to keep strictly within the limits of veracity. A strict regard for pure Chutmuck truth compels the admission that upon the occasion described, the boundary lines of candor were sometimes stretched back to the very verge of rupture. Their work is to promote harmony, good fellowship and brotherly feeling. If any one knows of a more important task than this, or one that will more advance the general happiness of members of the dental profession, let him arise and say so. If not, let him forever hold his peace concerning the happy hours of relaxation and honest hilarity.

DEATH OF PROF. CHANDLER.

Thomas Henderson Chandler, A. M., LL. D., M. D., D. M. D., dean and professor of mechanical dentistry in the dental department of Harvard University, died at his residence, in Boston, Mass., on Tuesday, August 27, 1895, aged 71 years.

Prof. Chandler was born and always lived in Boston. He graduated from Harvard with high honors, and entered the law school of his alma mater, graduating from that in 1853. His eyesight failing him, he was obliged to abandon law, and entered upon other duties. In 1858 he commenced the study of dentistry, and some years later studied medicine, still following dentistry as a profession. On the organization of Harvard Dental School he was made adjunct professor of mechanical dentistry, and on the death of Dr. Keep, in 1872, was appointed professor. On the death of Prof. Thomas B. Hitchcock, in 1874, Prof. Chandler was elected dean of the department, a post which he occupied with honor to himself and profit to the school for twenty-one years.

Prof. Chandler did considerable literary work in his profession, and was the translator into English of the important French works of Leber and Rottenstein, and of Magitot. He was a man whose modesty was quite equal to his attainments. While active in professional society matters at home, he seldom attended meetings in other places, and hence had not such a wide personal acquaintance as many. But he ever possessed the love and confidence of those who were privileged to know him well. In his loss his profession has received a severe blow.

DENTAL EXAMINATIONS IN THE STATE OF NEW YORK.

There has been a great deal of speculation as to how the examinations for license to practice dentistry in the State of New York are to be conducted. Perhaps a brief exposition of the methods to be employed will be acceptable.

In the first place, no one will, when the law is in full force, be allowed to come up for examination at all unless he shall first show that he is of the lawful age, of good moral character, and shall have graduated from an institution that demands as a preliminary to matriculation the Regents' certificate of having completed a full academic course in a school registered by the Regents as maintaining the proper standard. There are certain definite equivalents for this in the case of foreign students. The facts concerning this preliminary education are determined by an examination of the records in the Regents' department at Albany, where are kept complete statistics of every student who has ever taken a Regents' examination, which is the standard.

There are eight members of the State Dental Examining Board—one for each of the judicial districts of the State. These are appointed by the Regents, upon nomination by the State Dental Society. These examiners each year frame a list of questions, from which the Regents select a definite number. They are duly formulated, and when an examination is to be held, they are, under proper restrictions, placed in the hands of an agent selected by the Regents, who is not to be one of the Board of Dental Examiners. On the day of examination, when all the candidates are shut in a room and placed under the government of established rules, this Regents' examiner places before each candidate a list of the questions for the day, and he writes out his answers. Usually fifteen questions are asked, and he must answer any ten of them which he may select. These written papers are then sealed up, with the name of the candidate, and transmitted to the Regents, who, in turn, send them, without the name of the candidate, to the members of the Board of Dental Examiners, each receiving the papers in the studies which are assignad to him. The examiners read and mark the papers, and return them to the Regents, with their certificate. The Regents thereupon issue a license to practice, if the examination is satisfactory.

The examinations are held in the cities of New York, Albany, Syracuse and Buffalo, not less than four times each year, and simultaneously with those for medicine. The Board of Dental Examiners do not meet the candidates at all, nor do they know whose are the papers which they read and mark; hence no favoritism can be shown. The examinations will be held for the current scholastic year as follows:

September 24–27, 1895.
January 28–31, 1896.
April 7–10, 1896.
May 19–22, 1896.
June 16–19, 1896.

Each candidate who makes application for examination will be furnished with the proper blanks, and notified of the place in which he will be examined, where his records will be found. The daily programme of the examination will be as follows:

MORNING—9.15–12.15.

Tuesday—Anatomy and Histology.
Wednesday—Chemistry and Metallurgy.
Thursday—Operative Dentistry.
Friday—Therapeutics and Materia Medica.

AFTERNOON—1.15–4.15.

Tuesday—Physiology and Hygiene.
Wednesday—Oral Surgery and Pathology.
Thursday—Prosthetic Dentistry.

The fee, which must accompany the application, is twenty-five dollars.

DEATH OF DR. BAXTER.

Died at his residence, in Albany, July 15, 1895, Edwin C. Baxter, D. D. S., in his fifty-first year.

Seldom has the news of the death of a confrerè taken his associates more by surprise, than when it was announced that Dr. Baxter was no more. For some years a censor of the Dental Society of the State of New York, and for a much longer time actively associated in society matters with the prominent men of the State, he had always been found faithful to the best interests of the profession to which he had devoted his life. He graduated from the Pennsylvania College of Dental Surgery in 1864, and settled in Albany, in association with the late Dr. Nelson. A few years later they dissolved partnership, and thenceforth Dr. Baxter continued in practice alone. His interest in society matters was always manifest, and for some years he had been principally relied upon to watch the course of legislation in Albany, that no bills affecting the interests of dentistry should be sneaked through without the knowledge of members of the State Society. He was the means of preventing the passage of a number of pieces of vicious legislation, and thus had placed the profession of the State under great obligations to him. He will be much missed in the professional circles of the State.

FIRST MEETING OF THE BOARD OF DENTAL EXAMINERS OF THE STATE OF NEW YORK.

The State Board of Dental Examiners held its first meeting in the Regents' office, at the Capitol, Albany, N. Y., August 15, 1895, at 3 P. M.

The Board (all members being present except William Jarvie, of Brooklyn,) organized by electing Dr. A. P. Southwick, of Buffalo, President, and Dr. Frank French, of Rochester, Secretary.

A communication was received from Dr. Burkhart, appointing Dr. A. M. Wright, of Troy, to fill the vacancy caused by the death of Dr. Baxter. The credentials of Dr. Wright, appointed to fill vacancy till annual meeting, were unanimously accepted.

Voted, that the subjects assigned to the dental examiners be the same, respectively, as those in charge of the censors, viz:

"Anatomy," A. P. Southwick.
"Physiology and Hygiene," A. M. Wright.
"Chemistry and Metallurgy," S. B. Palmer.
"Oral Surgery and Pathology," William Carr.
"Operative Dentistry," A. M. Holmes.
"Prosthetic Dentistry," W. H. Colgrove.
"Therapeutics and Materia Medica," William Jarvie.
"Histology," Frank French.

Dr. William Carr was appointed editor of the question board, and each examiner was instructed, by vote of the board, to forward thirty questions in his topic to Dr. Carr, on or before September 1. It was also voted that Dr. Carr, from these questions, make up a set of papers for the examination to be held September 24–27, and forward to the Regents' office as soon after September 1 as possible.

A committee of three was appointed to prepare a dental syllabus, consisting of Drs. William Jarvie, A. M. Holmes and S. B. Palmer, the committee to report at the next meeting of the board.

Application for registration under the new law was received from Dr. G. A. Richards, of Elmira. After due investigation, the board recommended that the Regents issue their license, if his education and professional attainments and experience of not less than five years in actual practice, were found by the Regents to be equal to the requirements.

The following resolution was adopted with reference to the degree of Bachelor of Dental Surgery:

Resolved, That in the judgment of the State Board of Dental Examiners, the interests of the profession demand that the degree of Bachelor of Dental Surgery be not conferred in future by the Regents of the University.

Resolved, That those who have received the University degree of Bachelor of Dental Surgery be admitted to the licensing examination on the same terms as graduates of accredited schools, and, if successful, that with a license they also be granted the degree of Doctor of Dental Surgery, and that the degree of Bachelor of Dental Surgery be withdrawn.

Recommended, that the Regents issue a notice of instructions to county clerks with reference to the statute relative to registration.

Dr. Carr spoke of the great loss to the board and to the profession caused by the death of Dr. Baxter, and moved that a committee of three be appointed to draft resolutions. There were appointed as such committee, Drs. William Carr, A. M. Holmes and William Jarvie.

Voted, that the diplomas in the hands of the Board of Censors be turned over to the Regents, the secretary to give an order to Mrs. Baxter to deliver the diplomas, and that the secretary notify the printer of the discontinuance of the use of the plate.

Adjourned *sine die*.

FRANK FRENCH, *Secretary*.

ANCIENT DENTISTRY.

A contributor to the *British Journal of Dental Science* furnishes the following quotations from classic writers, to show that dentrstry was practiced more or less extensively in the early ages:

"Let no gold be placed upon the dead, but when the teeth are bound with gold, it is to be buried or burned with the body without injury."—*Roman tables or laws adopted B. C. 453.*

"The art of medicine is thus divided among them, (the Egyptians). Each physician applies himself to one disease only, and not more. All places abound in physicians; some physicians are for the eyes, others for the head, others for the teeth, others for the parts about the belly, and others for internal disorders."—*Herodotus, B. C. 450.*

"It is proper to join the teeth together, and this should especially be done with gold wire."—*Hippocrates, B. C. 400.*

"The hollow part of the tooth is also cleaned and scraped."—*Celsus, A. D. First Century.*

"So Ægle, with her bought and Indian bone
May seem to have a second mouth of her own."

"Cascellius extracts or repairs the aching tooth."

"What have I to do with you? Let the fair and young use me. I am not accustomed to polish boughten teeth."

"Thais has black and Lecania snowy white teeth, because the former has her own, the latter false teeth, and does not blush to wear false teeth and hair."—*Martial, (Latin), A. D. 80.*

"After this I made up to a rich old dame, who, in spite of her seventy years, had still a great liking for handsome young people, pretended a violent passion for her, notwithstanding the fact that she had only four teeth, and they were fastened in with gold wire."—*Lucion, (Greek), A. D. 170.*

ENGLISH SCHOOLS.

Our English brethren are rapidly rising to the level of the "inferior" American schools. Some of them have recently commenced the teaching of mechanical dentistry, and have opened laboratories with competent demonstrators in charge. Heretofore they have depended for instruction in this basal department of dental teaching upon a system of apprenticeship of students to practicing dentists, and two years of this indentured life formed the half of their four years' course. Imagine a recognized American college accepting the laboratory training of any average, irresponsible practitioner, as a part of its college curriculum. We believe in responsible teaching for every department of dentistry, and the American college that would accept the certificate of any practitioner whatever as the equivalent for a part of its curriculum, would soon find itself disfellowshipped.

OLD ASSOCIATES.

There is a wonderful deal of affection and good fellowship among the old habitues of the American Dental Association. There may be an occasional "crank," or even a moderately surly, ill-natured and selfish man among them, but the rest love him all the same. These members cross swords in the debates, and wrangle a little in the corridors, but after such a meeting everyone is agreed that the rest are, on the whole, about the best men going, and the very heighth of good company. Each has his separate aims and ambitions, and each possesses his own characteristics and faults, but after all, it is this very individuality that adds spice to our meetings, and we learn to bear and forbear, each with the other, and this is why the bond that unites the old members becomes stronger each year. As for the younger ones, when they get to be seniors, the world will discover whether they are as honest and as earnest as those of to-day, who will then have finished their career and gone to their reward—whatever that may be.

Dental Association of New South Wales.—The third annual meeting was held at the Australia Hotel in June, and was well attended. The president (Dr. Burne) occupied the chair, and stated, on behalf of the council, that great hopes were entertained of the Dental Bill being brought before Parliament and becoming law during the ensuing year. The balance-sheet showed a balance of £73 in hand. It met with general approval. The following officers were elected for the year 1895–6:—President, Dr. Burne; Vice-Presidents, Messrs. H. Paterson and S. Chaim; Hon. Treasurer, Dr. W. T. Halstead; Hon. Secretary, Mr. H. Taylor; Committee, Dr. Arthur Hinder, Messrs. C. C. Marshall, F. G. Hollway, J. Darton, H. S. Newton, E. A. Gabriel, and Byron Ruse; Auditors, Messrs. Corbett and Hebblewhite. A vote of thanks was unanimously accorded to the president, who, in thanking the members for their support, referred to the necessity of the profession drawing closer together, and thus securing a higher status. A vote of thanks to the honorable secretary for past services, and also to the chairman, closed the meeting. H. Taylor, *Hon. Secretary.*

Dr. Burne, the president of the New South Wales (Australia) Dental Association, is well and favorably known to many Americans through his visits to this country. They will congratulate him on his continued preferment.

Medical Examinations.—The Legislature of the State of New York recognizes three professions of medicine—a regular, a homeopathic and an electic. All graduates who propose to practice in the State must obtain their license from the Regents of the State of New York, and to receive this must be examined by one of the three Examining Boards. The statistics of the examinations for the past year are as follows:

	Total.	Successful.	Rejected.	Per cent. Rejected.
Examined during the year, ...	677	507	170	25.1
Examined by Regular State Board, ...	606	445	161	26.5
Examined by Homeopathic Board, ...	60	52	8	13.3
Examined by Electic Board, ...	11	10	1	9.1

Hyperidrosis.—Many persons are troubled with excessive secretion of the sweat glands of the feet. If this is offensive, disinfectants should be used. An excellent one is electrozone, in a dilute solution of which the feet should be washed. They may then be dusted with the following, which will tend to check the excessive perspiration:

℞ Comp. Stearate of zinc with
Boric Acid . . . . . . ʒ viii
Lycopodium . . . . . . ʒ xii
Powdered Alum . . . . . ʒ ii
Essence Bergamot,
Essence Lemon . . . . . aa m xxiv

A Certain Test.—In 1870, M. Tarnier deposited a sealed package with the Secretary of the Academy of Medicine, Paris, to be opened at any time in certain contingencies: otherwise to be kept unopened for twenty-five years. The package was opened at the end of the time mentioned, and found to contain a piece of bread, which had been perfectly preserved by submitting it to a strong pressure in a hydraulic press. It was said to have been as sweet as any fresh bread, and by steaming it was softened until it was easily masticated. If every discoverer had the same faith in his invention, and would submit it to the same test of time, what a world of trouble would be saved, even although in a very few instances the world lost the benefit of a useful process for a time.

AN UNUSUAL ANNIVERSARY.—That excellent and sterling monthly, *The Buffalo Medical Journal*, recently celebrated its semi-centennial. It was established by Dr. Austin Flint, in 1845, and it has occupied a front rank in professional literature from that day to this, but never was it more truly representative of the profession, or more prosperous than to-day, under the editorship of Dr. Thomas Lathrop and Dr. W. W. Potter. Its semi-centennial number was worthy its reputation, and whether in the value of its contents or the beauty of its typography and illustrations, it was a memorable issue. May it continue to flourish until it shall reach its centennial, and then but enter upon a new era of prosperity.

RE-PUBLICATIONS.—This journal does not usually publish matter that has appeared elsewhere. Whether its contents be good or bad, they are its own, and may be found originally in no other pages. We make an exception this month, in the two articles upon Green Stain, not because we have such an over-weening admiration for the authors, but because we have an unexpressed idea that they ought to be our property as much as that of any one. But they are not. They were read before the New York State Dental Society, and originally published in the *Dental Cosmos*, under arrangements made by the Society with that journal.

COMMENDABLE.—John Eustace Dennan, a dentist practicing in London, England, was convicted of obtaining money under false pretences, and was sentenced to penal servitude. The record of his conviction was brought before the Medical Council, which has charge of the dental registry of England, and his name was ordered stricken from the list of qualified dentists, and he was prohibited from calling himself a member of a respectable profession. In England they believe that dentistry should not be made a harbor of refuge for convicted felons. They have sufficient of professional pride to try and preserve their respectability, at least.

DENTISTRY IN HOLLAND.—For the first time in the history of this historic country, its dentists met in national assembly in June last. The meeting was held in Amsterdam, and was presided over by Dr. John E. Grevers, of Amsterdam, who was largely instrumental in organizing for the meeting, and to whom much of its acknowledged success was due. The close of each day was marked by some festivity, in which the ladies bore an important part, and the whole was wound up by an excursion up the Zuyder Zer to the Island of Markens, given by Dr. Grevers to the foreign guests.

SOUTHERN DENTAL ASSOCIATION.—The next annual meeting of the Southern Dental Association will be held in Atlanta, Georgia, commencing the first Tuesday in November. Arrangements are being made for the greatest meeting in the history of the "Southern." The Cotton States and International Exposition will be in progress, and railroad rates will be very low. All friends will be given a hearty welcome.

Respectfully, E. P. BEADLES,
Cor. Sec. S. D. Ass'n.

THE PHYSICAL CHARACTERISTICS OF TEETH.—Every dentist should be familiar with the work of Dr. Black, in determining the relative density and proportion of lime salts in the teeth. He has performed a great many experiments, and as the result of these he draws some startling deductions. We urge every reader of this journal to read, at least, the abstract of his paper in the *Dental Cosmos* that may be found in this number.

THE ENGLISH ASSOCIATION.—There seems to be a considerable faction in England that is bitterly opposed to the methods and manners of the British Dental Association, and its mouthpiece is the newly established *Dental Weekly*. A correspondent of that journal terms the members of the B. D. A. "busybodies" and "frauds," who are more solicitous to build themselves up than to benefit the profession. The editor of the *Weekly* fears that if present methods of the B. D. A. are continued, it will result in the formation of a class like the German Zahntechnicker.

THE NEW DENTAL LAW OF THE STATE OF NEW YORK.—As usual, a considerable number of qualified dentists, principally recent graduates, neglected to register before the new law went into effect. There is now but one way in which they can become legal practitioners, and that is by making application to the Regents for an examination, passing it, paying a fee of twenty-five dollars, and accepting the lesson as a warning not again to put off until to-morrow what should have been done the day before yesterday.

UNIVERSITY OF BUFFALO.—The Medical and Dental Departments of the University commenced their regular terms for 1895 and 1896 on Monday evening, September 23rd, by a public lecture in Alumnii Hall. The classes in both departments are large, and everything promises a prosperous session. The Schools of Law, Pharmacy and Pedagogy, hold their opening exercises on another date.

UNION MEETING.—The union meeting of the Sixth, Seventh and Eighth District Dental Societies of the State of New York, will be held with the Sixth District Society, at Binghamton, N. Y., Oct. 29th, 30th, and 31st, 1895. The Joint Business Committee have issued a preliminary announcement, and later will send out the full programme. A large and enthusiastic meeting is anticipated.

TO SAVE THE BABIES.—The French government, dispairing of any hope to increase the birth rate of the country, is now devoting its energies to saving those already born. The new law forbids, under a severe penalty, any one to give infants under one year any form of solid food, unless such be ordered by a written prescription, signed by a legally qualified physician.

AS AN ANTISEPTIC.—In the surgical operating room of the Buffalo General Hospital, common ground mustard is now used in preparing the hands for operations, and in sterilizing the surface preparatory to incisions. It is an excellent disinfectant and deodorant, and it is by far the most effective of the vegetable antiseptics.

A GREAT INDUSTRY.—There are in the United States over 2,000 establishments, with a capital of over $100,000,000, engaged in the manufacture of drugs and chemicals.

WHAT FOOLS THESE MORTALS BE.—It is estimated that there is spent in the United States each year, for patent and proprietary medicines, over $25,000,000.

CHAPIN A. HARRIS.—The memorial fund to raise a monument over the tomb of this illustrious man does not grow as it should.

THE

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THE GENERAL PRINCIPLES INVOLVED IN TECHNICAL INSTRUCTION IN DENTAL SCHOOLS.

DENTAL PEDAGOGICS.

BY EDWARD C. KIRK, D. D. S., PHILADELPHIA.

Read before the National School of Dental Technics, Saratoga, August 3, 1896.

The field assigned to me in this symposium of views upon dental educational methods is one which I approach with much hesitation because of its complexity, and especially because of my sense of incompetency to adequately deal with it. I make the attempt, however, because of my intense interest in the subject, and with the hope that I may be able to suggest some lines of thought which may lead to a discussion that will bring out ideas profitable to all of us.

The problem of dental education, as I apprehend it, is simply the problem of human education as adapted to the training of dentists; the adaptation of the general to the special. We are, therefore, concerned with a study of the principles and methods which are best suited for the education of the human faculties in general, and the application of these principles, with proper modifications, to the business of making dentists.

The educational process of making dentists is one which has undergone rapid evolutional change through the progressive development of our specialty, and the increased educational equipment required by the dentist to enable him to adequately meet the demands upon his knowledge and skill, as the field of his activities has enlarged.

It is not necessary to more than allude to the changes which in the past half century have taken place in what constitutes the science and art of dentistry, as these are familiar to all of you. We may, however, call attention to the fact that like all other departments of human knowledge, the origin of dentistry was characterized by its growth as an art, and it was not until a vast mass of facts had been collated that their orderly arrangement into systems, under generalizations based upon their common factors, was attempted, or was indeed possible. It was at the period when such generalizations, in the form of so-called natural laws, were first applied to the empirical facts and observations of dentistry, that workers in our calling began to be imbued with the scientific spirit, and to adopt and apply the scientific method in their studies and, as a consequence, to educational methods. The adoption of the scientific method was not only an outgrowth of the expansion of the realms of dental knowledge, but a necessity in our educational methods for dealing with the enormous mass of data required in the mental equipment of the dentist. The educational problem is not simply one of imparting to the student a knowledge of a certain group or groups of data, but there is involved the much more important consideration of how he shall view these facts and phenomena, upon which question depends his whole mental attitude towards his professional work and his capacity as a practitioner; whether he shall be an empiric merely, or a rational scientific dentist; whether in a given case his mental need will be satisfied with knowing how to do it, or whether his higher cultivation as a scientific practitioner will lead him to demand the reason why he should do it and enable him, because of his superior training, to supply the answer from intelligent reasoning. The history of the growth of dentistry has its analogue and counterpart in the educational development of its individual practitioners. As dentistry has risen from the position of a mechanic art practiced empirically, to a scientific profession, so have the individual members of the profession, in the acquisition of their professional knowledge, passed through the stage of fact gathering, the observation of phenomena, to the phase of orderly arrangement of and logical reasoning about their observations, thus developing the scientific method of thought as applied to their work. This sequence in the acquisition of knowledge is in no degree peculiar to dental education, but is the natural physiological order observed in all channels of human development. That it is so is a well-known and demonstrated fact, which has been elaborately worked out by the modern school of psycho-physiologists. Much valuable information as to the natural or physiological processes of mental development has been derived from the systematic study of the intellectual growth of children. From carefully conducted observations in this field of research it has been shown, among other things, that the child's knowledge of its environment is gained at first solely through the medium of its sense perceptions, *i. e.* through sight, touch, hearing, taste and smell; and it is through these faculties that an unconscious automatism of reaction in relation to its environment is soonest established; that ideo-motor acts of considerable complexity eventually tend to become sub certical in their origin. The education of the child proceeds through its sense perceptions almost exclusively for a considerable period of its growth, and it is only after development has progressed to a comparatively high degree that its education may be continued through appeals to its imagination, or that it has in fact any imagining power to appeal to. Let us consider for a moment what this power to imagine means. Literally, as I take it, it means the power to construct a mental image of something suggested to the mind, generally through external means. Suggestions may, of course, originate from innumerable sources, but in systematic educational processes they are usually conveyed by the teacher to the pupil in the form of words to which definite meanings are attached, so that by a skillful assembling of words the teacher conveys to the mind of the pupil ideas which lead to the formation in his mind of an image of the thing suggested. If it be a material thing which is the subject of study, the suggestion of it is conveyed by a series of analogies. Its physical properties, for example, are stated as being hard, soft, green, yellow, tough, flexible, etc., and as each one of these attributes is named, the pupil immediately relates it with some other object of which he has had experience, as a standard having those qualities, until, when he has thus related them all, by grouping them together, he is able to derive from the totality of the separate images a composite of them, which, depending upon the development of his visualizing power, will be a more or less accurate mental image of the thing about which his teacher has been talking.

We have now seen that in his intellectual progress man develops from a stage of mere observation and recording of simple facts related to material things in his environment, to the ability to deal with groups of facts and the relationships of these groups; in other words, from the observation of concrete phenomena to abstract reasoning. We have also seen that with the difference in the mental process is correlated a difference in the method of obtaining a mental grasp of the two phases of thought respectively. With these basal facts in mind we may profitably consider the character of the mental status of the average dental student at the beginning of his technical studies, and the rational method of applying to his successful training the data already considered. Were the standards of preliminary educational requirements generally demanded by the colleges such as would admit as dental students only those trained in habits of study and those accustomed to logical abstract reasoning, the educational method required for their technical training would be much simplified. With the present preliminary requirements, the colleges are flooded with men utterly untrained in the scientific method of thought and study, and, as a consequence, their successful education involves not only a training in the elements of professional knowledge, but a training in the methods of acquiring it. The whole field of dental knowledge is to the average dental matriculant a *terra incognita*, to which, in many respects, he bears the same mental relation as the mind of the new-born infant does to his material environment.

The problem of how to impart to the dental student the education which he needs is one which should be seriously considered and intelligently solved.

The matriculant, by the act of matriculation, becomes a party to a contract with the college which, in consideration of the tuition fee demanded and accepted, agrees to supply the education and training necessary to equip the student for the practice of his profession. Considerations of equity, economy and the spirit of progress that dominate our whole civilization, demand that the method of education pursued shall give to the student the largest possible acquisition of knowledge and skill in the specified time of his course of instruction.

If it be admitted, then, that the relation of the dental matriculant to his new field of study is analogous to that of the infant to his material environment, it is evident that no more efficient method of imparting dental instruction to him can be devised than that patterned after the natural physiological method by which the infant acquires knowledge, viz., through his sense perceptions. It is this method upon which is based the system of dental technic instruction, which we are met together to study.

I have already indicated the main difference between the method of instruction by direct appeal to the perceptive faculties, *i. e.*, the technic method, and the indirect method by appeal to the imagination; but it may not be amiss to call your attention to the relative efficiency of the two methods. The object to be attained in training the dental student with respect to a given procedure, is, in general, first, to give him a clear mental picture of what is to be done; second, how it is to be done and the ability to do it; third, why it is done.

If the thing to be done is the filling of a carious cavity in a tooth, for example, the teaching him what is to be done would be a very simple matter if the mere statement of the case, "the filling of the carious cavity," fully explained the whole procedure, which it does not. It is merely a statement of the result. But we may go further and amplify the statement until we have developed it into a formal lecture, embodying a full description of all of the details of the operation, and though we may have furnished the student with a mental picture clear enough to enable him to essay the operation on his own account with some hope of success, his concept of the procedure has been achieved in the form of a mental image, the result of word suggestions, through one perceptive faculty alone, viz., that of hearing.

In conveying a new concrete idea to an untrained mind, it is necessary that the impressions be so vivid and definite that they remain indelibly stamped upon the memory—or, if you please, that the groups of brain cells which have been stimulated by suggestion in such a manner that they function coördinately in the production of a given idea, shall, when the suggestion is repeated, again function coördinately without break or fault in the process. In the example under consideration, and the whole series of mental phenomena to which it is related as a type, the permanence of the mental picture is directly due to the intensity and multiplicity of the nervous impressions which the brain has received concerning it. These impressions are more intense when the related stimuli are directly received than when indirectly received. Also, their intensity is greater when the stimuli are received through several perceptive channels than through one. Hence, if instead of utilizing all of our energies in endeavoring to impress a mental picture upon the mind of the student through the medium of his auditory nerves, we appeal also to his sight, touch, and, if possible, his other sense perceptions, we have not only multiplied the intensity of our suggestion many times, but have given him a direct mental stimulus instead of an indirect resulting in a picture created by his own imagination. Where the mental image is the result of direct stimulus through the medium of the sense perceptions, we say such knowledge is the result of actual experience, and the relative superiority of that class of information admits of no argument. But we have seen that the chief object of dental instruction is that the student shall be able to put into effective practice the knowledge which he has gained. He must be able to do the thing which he has been taught to do. His education must, therefore, include an amount of skillful hand and muscle training, correlative with the degree of his mental culture. These two phases of his education must develop *pari passu* and in equivalent degree. The initial stimulus for the performance of an ideo-motor act may be either central or peripheral in its origin. Where a sufficient knowledge of a given procedure has been gained through study of the subject to permit the coördinate action of the group of cerebral cells related to that procedure, the act may be attempted by reason of the central stimulus of auto-suggestion, but the command sent out by the brain to the group of muscles concerned in the act may fail of its object by reason of a lack of training in the muscles themselves. On the other hand, the muscles may be gradually trained to coördinate in the performance of some complicated procedure, of which the brain as yet has developed no clear understanding and is consequently powerless to originate. Hence, the act fails of perfect accomplishment from lack of coördination in the function of the central nervous control. It has been shown, however, that the repeated stimulation of the cerebral cortex by correlated irritations of the peripheral sense perceptions, rapidly brings about a proper coördination between the central nervous control and the executive muscles, which means that complete understanding of the act performed by the muscles has been achieved, and that the indefinite repetition of it now becomes possible whether originated as an ideo-motor impulse in the brain or by peripheral stimulus of the musculo-nervous terminals. It is the combined training of the muscles and of the brain which has been shown by experience to produce the most rapid and satisfactory, as well as most permanent results. It is a mistaken view to regard the manual-training or technic idea as a means merely for hand training. It is and should be regarded as a method of brain culture, with the hand as one of the means to that end, having the great advantage, as related to dental education, of creating a high degree of manual skill during the time that it is efficiently cultivating the brain.

The principle involved in the technic system of instruction is broader and means more than mere cultivation of the brain and hand. It includes the use of all of the perceptive faculties as means of brain cultivation. By the application of this principle not only may manual dexterity be achieved but all the powers of observation be trained to their highest capacity, and the reasoning faculty correspondingly developed.

The importance of the technic idea should not be lost sight of in the teaching of the theoretical branches of dentistry, as the applicability of it to these branches is fully as important as it is in the so-called practical departments. The laboratory system of instruction in chemistry, anatomy, physiology, pathology, bacteriology, etc., has on the continent of Europe, and to a large degree, elsewhere supplanted the didactic method of instruction, as it has been found to yield better results in less time. There is great temptation in the didactic method to teach principles, before a knowledge of facts has been acquired. This is unphysiological, wasteful of energy and comparatively a failure, so far as the quality of the result is concerned. As an illustration of the comparative value of the two methods in the theoretical branches, we may take chemistry as an example, and as a particular instance assume that the effect of pressure and temperature upon gaseous volume is the matter of instruction. By the didactic method with its corollary of text-book study, the student is taught by the lecturer, the law of Boyle, that the volume of any gas varies directly as the temperature and indirectly as the pressure. This he memorizes and reasons deductively from this law to the facts concerning it. The process, unless the student was previously trained in methods of abstract reasoning, is tedious and difficult, because abnormal and unphysiological, and undoubtedly the exact reverse of the method by which the enunciator of the law arrived at it himself. If the student had first been made familiar by observation in the laboratory, with the facts that gaseous volume is increased by temperature and decreased by pressure, and had been told that these phenomena were uniform for all gases, he would, by the process of inductive reasoning, have formulated the law for himself, and by the same methods pursued by its discoverer. We should make the acquisition of knowledge a pleasure, not a labor, and the surest means to that end is the careful and intelligent elaboration of the principles involved in the technic idea of instruction, and their application to all departments of our educational system.

PULPITIS.—INFLAMMATION OF THE DENTAL PULP.

BY AN OLD CONTRIBUTOR.

Save as it is modified by surrounding conditions, inflammation of the pulp does not differ from that of other analogous tissues. When the subject of general inflammation is fully comprehended, then, and then only, can the phenomena presented in pulpitis be clearly understood. It is but necessary to consider the peculiar complications brought about by the environment of the dental pulp, and to make due allowance for them, when the whole matter becomes plain and lucid. These complexities arise from the fact that the tissue of the pulp is somewhat modified in structure, and at the same time is inclosed within unyielding, bony walls, which in health form its sure protection, and in disease its rigorous prison-house.

Whether or not the dental pulp in its healthy, normal condition, is or is not sensitive to external impressions, is a disputed question, which cannot be satisfactorily answered, for when it is responsive it is at once claimed that it is not in a normal condition. Certain it is that an entirely healthy tooth gives no sentient signs, even of the presence of a living pulp. It is a very difficult matter positively to diagnose a dead pulp from a healthy living one, in certain conditions. Both are equally unresponsive to ordinary thermal changes, and the enamel and dentine of each are equally insensitive. Those who have had occasion to drill into or excavate a tooth that has never had any disturbance of the pulp tissues, know that the dentine is unresponsive, while the pulp may be, and often is, punctured without the knowledge of the patent.

But if there is recession at the gums, or if there shall have been any pain in the tooth whatever, indicating pulp complications, or even any pulp disturbance insufficient to produce pain, both dentine and pulp may be exquisitely sensitive. There are many instances in which caries has extended to the pulp tissue, which is absolutely exposed to external impressions, in which there never has been either pain or sensitiveness. This cannot be reasonably accounted for by the theory of personal idiosyncrasy, for individual temperment will scarcely cover a departure from physiological laws. There must be a good and sufficient reason for such an immunity.

The blood vessels of the pulp possess a modified structure, in that they are without the regular muscular coats of those found in most parts of the body. In this respect they resemble those of the brain, which also is a tissue protected by unyielding, bony walls, analogous to those of the tooth. The nerves of the dental pulp are also modified, for while they are composed of nervous elements, they lack the general structure of other nerves, and are without the usual sheaths. The connective tissue of the pulp is not specially modified in structure, but it must be peculiarly so in function, through its exceptional blood and nerve supply.

The dentine is without nerve tissue, and yet when in an irritable condition it becomes acutely tender. Sensation can only be conveyed through the dentinal fibrillæ, whose protoplasmic structure, containing all the elements of nerve tissue, becomes inordinately responsive in certain conditions. It is well established that formative tissue—embryonic matter—may take upon itself inflammatory conditions, and under such circumstances possess characteristics unknown to it when in a normal state. The dentinal fibrillæ, under the stress of irritation, react upon the dental pulp, and induce inflammatory conditions in that tissue, which modify its function, as that of the fibrillæ themselves is modified.

It might be reasonably inferred, then, that the sensitiveness of either dentine or the tooth pulp may be the direct result of irritation, and the inceptive stage of an inflammatory process; that sensitiveness of dentine is but the result of an abnormal, irritative, inflamed condition, and that this may react upon the pulp and produce the same disturbance in a tissue that, from its modified blood and neural supply, might, in its normal and healthy state, be quite irresponsive to external impressions; that any special impressiveness of either of the tooth tissues is an indication of a pathological condition, and that in treatment this should always be kept in view.

Inflammation of the tooth pulp, then, will differ in the pathological changes presented, and the phenomena exhibited, from those of most other tissues, just so far as their structure is modified, and their environments qualified by the tissues with which they are in relation. The peculiar nerve supply will change the character of sensation, while the special vascular system will vary the phenomena presented in the earlier stages of inflammation, and materially modify diapedesis. Proceeding upon this hypothesis, it is not difficult to comprehend some things heretofore unintelligible in the pathology of the dental pulp, and to find indications that may be a complete guide in diagnosis and treatment.

A specially sensitive tooth, then, is one whose tissues are in an irritable condition, and this is either the initial step in, or a positive stage of, an active inflammation. The irritant may be any one of a long list.

Caries has perhaps invaded the tooth, and micro-organisms have penetrated the tubuli, becoming themselves the irritant, or exposing the deeper dentine and the pulp to the irritating action and the thermal changes of external agents.

It may be that an inserted filling is this external irritant.

There may be recession of the protecting gum tissue at the cervical portion of the tooth.

A traumatic injury, a blow, inordinate action, or the attrition of mastication, or any mechanical violence, may be the source.

Structural changes within the tooth pulp, such as the formation of calcific deposits, are a sufficient cause.

Whatever may be the source, there will be a determination of blood to the irritated pulp tissue, and an engorgement of its parenchyma. Because of the absence of the usual arterial and venous coats, the blood channels at once yield to the pressure. There is not the usual vaso-motor system of nerves to control the resilience of the vascular system, and diapedesis, or the escape of the elements of the blood into the pulp tissue, is materially modified. It does not at once take place in the usual acceptance of the term, but a stage of active engorgement of the blood channels ensues. The dental pulp, like the brain, is without the usual lymphatics of the absorbent system, because the modification of the blood supply in a measure makes this unnecessary, but the comparatively unrestrained yielding of the blood channels, and the retardation of the infiltration of the parenchyma of the pulp, allows for a return to a physiological state, if once the irritation cease, without the necessity for the usual process of resolution, through the activity of the lymphatics, for the relief of the hyperplastic condition. It follows, then, that the treatment of ordinary pulpitis, after the removal of the irritating cause, should be directed toward the relief of the congested condition, by in some manner deflecting the determining blood current, and allowing the engorged vessels to empty themselves. So long as the possibility for this exists, it is quite possible to preserve the vitality of an inflamed pulp. When the pathological condition shall have proceeded to an extravasation into the body of the tissue, there are no lymphatics to take it up, and its removal is as impossible as are effusions in the brain. Pulp capping under such circumstances will be a hopeless proceeding, and the presence of any infiltrated matter will contra-indicate it. The fact that some pulps become fully exposed, and their limiting tooth walls are broken down without either pain or special sensitiveness, may be accounted for through their never taking upon themselves real inflammative conditions, because of a modification of nerve structure greater than that which is usual. Such pulps are quite devoid of nervous supply.

SYMPTOMATOLOGY AND TREATMENT OF INFLAMMATORY CONDITIONS OF THE TOOTH PULP.

The symptoms of pulpitis must necessarily vary with the pathological state. Usually, the first indication is a sensitiveness to thermal changes. Cold air or cold water cause a pain of a sharp, lancinating character. Not infrequently the neck of the tooth, or any abraded surface, is also sensitive to any outward irritant, such as a metal tooth-pick or instrument. This indicates dentinal irritation. The responsiveness to thermal changes increases and becomes more persistent, until there is a distinct odontolgia, or toothache. This pain will be rather paroxysmal, returning upon slight provocation, and passing away in a few moments. It may be difficult for the patient to determine exactly which tooth is affected, because the pain may be distributed along the track of the nerve. Successively isolating each tooth by the rubber dam, and the application of alternate heat and cold, will, however, usually determine the matter. Sometimes there is a response to percussion, and a diagnosis may be reached through that. This earlier stage will be that of hyperæmia, and the beginning of engorgement or congestion. The exalted sensibility is due to the irritable condition of the nerve tissue.

With the exacerbation of the inflammatory condition the pain becomes more intense and continuous. With the increase in congestion the pulp, which is held immovable within the bony tooth walls, becomes intensely irritable, and the pain, instead of being intermittent, becomes almost continuous. The lancinating flashes can no longer be distinguished, but are so quick succeeding as to be practically unintermittent, and there is at the same time a deep, boring pressure felt, which indicates that the inflammation is passing to its second stage, that of effusion, in which there is a passing out of the elements of the blood into the tissues.

Up to this time the vitality of the pulp may readily be preserved, if active measures are taken for the relief of the inflammatory condition. This stage once passed, and extravasation into the pulp tissues having taken place, the probabilities are largely against conservation.

At this point the pain changes its character somewhat, and it is not of such a sharp, lancinating nature. It becomes more steady, and less intermittent, or paroxysmal. There is a greater feeling of pressure, and it is more readily located. The pulsation which, up to this time, is sometimes very distinct, now ceases. The congestive stage is at its height, and entire stasis of the blood current in the pulp is imminent. Heretofore cold has been irritative and warmth quieting. The opposite condition now ensues, and ice water will relieve the pain, while any warm application exacerbates it. The suffering caused by the affected organ is intense, but the end is probably near at hand. With complete stasis sensation is gradually lost, the pain progressively abates, neither cold nor heat aggravate, and the tooth is unresponsive to any ordinary irritant. The inflammatory process has run its destructive career, and the pulp is dead. This is the usual train of symptoms, and the ordinary progress of the disease.

The treatment in the earlier stages will be abortive. The first essential is to make a clear diagnosis of the case, by carefully considering all the symptoms. The exact stages of the disease should be determined, if possible. This having been done, the next point will be to remove the cause. If it be progressive caries, the cavity of decay should be carefully washed out, all debris removed, and an anodyne introduced. If any foreign substance is the irritant, it must be at once eliminated. The tooth must be relieved of all labor of mastication, and given entire rest. Counter-irritants, such as iodine and aconite, capsicum bags, ammonia, and even cantharidal applications are useful, by promoting metastasis. That is, a new focus of inflammation is created in a proximate territory, but which is upon the surface, where it can be reached and resolution may be expected. This has a tendency to divert the impending blood currents, and thus to relieve the threatened engorgement of the pulp.

Hot pediluvia, or foot baths, should be prescribed, the water to be as hot as can be borne, and these to be continued for at least thirty minutes, for the purpose of equalizing the circulation and relieving the plethoric condition of the pulp.

Saline cathartics are useful, because they relieve the blood tension, removing from the sanguinary fluid a portion of its watery constituent, and thus greatly depressing the tension.

Diaphoretics are perhaps the most important of the general remedies. They not only extract a considerable amount of water from the system and from the blood current, but they act as general depurators, promoting healthy functional action and removing local obstructions.

Anodynes are indicated, because they equalize nervous function, and tend to restore the proper tone to the arteries and veins through the vasor-motor nerves, and to allay the general nervous excitability.

Probably there never was a case of pulpitis that would not yield, temporarily at least, to a vesicant at the back of the neck, acting as a counter-irritant, a hot foot-bath for thirty minutes, and twenty to forty grains of bromide of potash. Such drastic measures are not, however, often called for; milder means will usually suffice.

Any of the preceding measures may be resorted to in cases in which there is no actual or threatened exposure of the pulp through progressive causes, or by accident. Where there is a large cavity of decay, it must, first of all, be thoroughly opened up, and all debris and foreign substances removed as carefully and as thoroughly as possible. It should next be washed out with tepid water, in which a little salt has been dissolved, by ejecting the stream from a mouth syringe. The cavity should be dried out, and a pledget of cotton dipped in oil of cloves, or dilute creosote, or hamamelis inserted, this to be carefully sealed up without any pressure, by means of gutta-percha, or a pledget of cotton dipped in chloro-percha. A solution of sandarac, in which to dip the cotton, should never be employed, because it insecurely seals it, and because it very soon decomposes, leaving the cavity in a worse state than its first.

If there be actual exposure of the pulp tissue, after the careful cleaning and washing out of the cavity, the rubber dam should be applied, the cavity dried out by means of hot air, and the pulp and cavity walls sterilized by the application of mercuric chloride, solution 1 to 2000, or some other effective germicide. If there be considerable congestion, a pledget of cotton dipped in the following may be carefully placed over the point of exposure, and sealed up:

℞—Plumbi acetatis, ...	grs. v.
Tinct. Opii, ...	ʒ ss.
Aquæ, ...	℥ j.

This should be allowed to remain some hours, when it may be changed for a dressing of dilute oil of cloves, or of cassia. All pain will usually cease with the application of the lead water. When more active measures are demanded, the following dressing may be applied after the sterilization:

℞—Atropia sulph., ...	grs. j.
Aquæ dest., ...	℥ j.

If there shall be bleeding, and the exudation of serum from the exposed pulp, it may be dressed with a solution of tinct. iodine and persulphate of iron, in equal parts. Tinct. opii may sometimes be necessary for the purpose of soothing the disturbed tissue.

The inflammation and congestion once relieved, the necessary operative measures for the further preservation of the tooth may be instituted. If there is no actual pulp exposure, these may, if skilfully executed, be confidently relied upon to serve their full purpose. If, however, any portion of the pulp tissue shall be really uncovered, the prognosis will not be as favorable. In the earlier stages of inflammation, before there is any exudation from the blood vessels of the pulp, the best results may be predicted.

If there has been extravasation of the contents of the blood channels into the body of the pulp, absorption cannot be expected, owing to the absence of lymphatics, and breaking down of tissue or death of the pulp will probably result. If the symptomatology here given is carefully studied, and habits of observation are cultivated, the determination of the inception of the degeneration process will not be a difficult matter, the prognosis will be readily made, and the advisability of either pulp-capping or devitalization may be unhesitatingly decided upon.

THE SYSTEMIC TREATMENT OF PYORRHŒA ALVEOLARIS.

BY FRANK L. SIBLEY, D. D. S.

Read before the Seventh District Dental Society, Rochester, N. Y., May, 1896.

It is my intention at this time to consider only one phase, and that very briefly, of the subject of systemic treatment of pyorrhœa, due to lithæmic conditions. I shall endeavor to give a general idea of the cause of these conditions and their treatment; striving to give emphasis to the belief that it is the effect rather than the cause that is usually treated. I mean by this that the general aim seems to be to effect a solution of the urates, while little is said about the possibility of preventing their formation. It is the object of this paper to outline a treatment that is prophylactic rather than remedial.

We are told that lithæmic conditions are produced by various causes, such as poor assimilation, faulty elimination, degenerated condition of the organs involved, and improper oxidation of nitrogenous matters taken as food. The question which would naturally suggest itself is, which of these conditions is responsible for the production of the urates? and, if it be poor assimilation, faulty elimination, or improper oxidation, we may have some hope of correcting the condition by proper treatment. If it be a degenerated condition of the organs involved, no human agency can bring them back to their natural state of efficacy, and such treatment as will keep the urates in solution will be about all that can be done. If we have to deal with a preverted condition, such as inactivity of the liver, kidneys, or skin, a different line of practice would suggest itself, and it is in these cases that I propose to give or suggest a course that seems to me to be rational and easy to follow.

The usual cause of preverted condition I believe to be a torpidity or inactivity of the liver, and it would seem proper to stimulate that organ. A powerful agent for this purpose is mercury, and it is unquestionable that frequent relief from the symptoms alluded to is to be obtained, in a remarkable degree, by occasional small doses of that drug. For our purpose, however, it is not always necessary, nor can it be considered as harmless for prolonged action as another class of agents; I refer to certain classes of natural mineral waters. The principle upon which these waters acts is by producing activity in all the digestive functions, and the waste matters which have hitherto been thrown out as urates by the kidneys, are eliminated in some other form. If we are inclined to doubt the efficacy of these mineral waters on account of the infinitesimal quantity of natural salts held in solution, we should remember that they do not come under the usual rules of dosage. As a proof of the superior force of the saline combinations found in natural springs, I may refer you to the following experiment: If, by careful evaporation, such mineral waters are reduced to their pharmaceutical condition of crystallized salts, they will be found to possess little if any more power than similar salts as obtained by ordinary synthetic processes, as they are met with in every drug store. They no longer do their work on the same terms as when administered in the original water before they were separated by evaporation. It will, therefore, readily be understood how essential to our end it is to employ the natural mineral waters, since what are called artificial waters, however admirably prepared, are simply pharmaceutical products, and are destitute of the very qualities which distinguish the remedies they are designed to imitate.

Concerning the diet, there are certain restrictions which are extremely important. There are three chief elements ranked among matters ordinarily taken as diet, which, in order to obtain the end in view, must be permitted to the patient very sparingly; they are: alcohol, saccharine and fatty matters. As a result of frequent observation it has been determined that this method, much more than the elimination of meat from the dietary, will reduce the formation of urates. It is not to be imagined that we can confine our pyorrhœa patients to a strict diet, any further than to regard these few important restrictions. But we should caution them to be temperate in their foods, taking plenty of outdoor exercise, and daily baths, with gentle use of flesh brush and Turkish towel.

It is this system of diet and the occasional systematic employment of mineral waters, that constitutes the treatment advised for the purpose of checking calculus disease in its early stages, and preventing the formation of those pathological conditions which are due to an abnormally large formation of the urates, and their consequences.

PYORRHŒA AND LITHÆMIA.

BY MONTGOMERY E. LEARY, A. B., M. D.

Read before the Seventh District Dental Society, Rochester, May, 1896.

The symptoms of these two diseases are familiar to us all. Their relation to each other and their successful treatment interests both dentist and general practitioner.

During the past winter, Dr. F. L. Sibley sent me samples of urine from several patients who were undergoing treatment with him for pyorrhœa. On examination, these samples revealed, without exception, an excess of urates, or uric acid. The patients gave in nearly every case a clear history of lithæmia, and in all the clearly diagnosed lithæmic cases, the family record was corroborative of an inherited tendency. Several cases sent me by Dr. Hofheinz have given the same records and results. In my own practice, I have examined the urine from several lithæmic patients, with like results. In four out of six cases, pyorrhœa was also present.

Therefore I feel that facts permit us to assume pyorrhœa as a sequence of lithæmia. Time and treatment will prove if our conclusions are correct.

Lithæmia is by all authorities ascribed as due to imperfect oxidation of food, particularly the nitrogenous. Where does the fault lie in this imperfect oxidation? We believe improper action of the liver is the main cause; for admitting that to be one of the functions of the liver, all our cases had indigestion, biliousness, constipation, and other indications of hepatic insufficiency. One peculiar symptom was noticed in a patient, whose history, both personal and family, was lithæmic, accompanied by pyorrhœa, and who had passed uric acid, gravel and calculi. When he came under my charge his urine was filled with blood, and crystals of calcium oralate.

From such a clear history of lithæmia, one would expect uric acid crystals, and their almost total absence, with the multitudes of calcium oxalate, was for a time a puzzle. Later, I found that under the action of potash, uric acid is often oxidized into oxaluric acid, and this into oxalic acid, which combines with the calcium in the body and gives the calcium oxalate. I cannot find that this patient took potash, but I believe an action, similar to that above mentioned, was going on.

This patient had been under the care of first class physicians for about four years, and all agreed in their diagnoses. The last year he had been almost fed on lithiun, with no effect. Having used all the solvents with no marked or permanent benefits, I came to the conclusion that we would have to go back to the cause of excessive uric acid formation if we expected to cure, or even relieve.

The desired results were obtained from sodium phosphate, and potassium citrate. The phosphate was selected because of its action on the liver, increasing the flow of bile and also causing an increase in the amount of urine. Sodium phosphate has proven of great value in cases of inactive liver. The sodium salts have a particular affinity for the liver, and also effect the elimination of uric acid. Potash acts more especially on the kidneys, while the vegetable salts favor the oxidation of organic substances, and assist uric acid elimination. The citrate is the most palatable. Plenty of water is of as much value as any other remedy.

Right here I must acknowledge the assistance given me by Mr. Edwin E. Johnson, of Buffalo, whose efforts had been directed in the same channels as my own. He had prepared in granular, effervescent form, the same remedies I was using, and in addition ammonium phosphate, ammonia being a diffusible stimulant. Mr. Johnson's preparation, which he calls "*Phospho-Alkalates*," has proven so acceptable to my patients that I now use it exclusively, instead of combining the drugs in their crystalline form. In over eight months' use it has given invariably satisfactory results. The diet should be a general mixed one, not too much meat or starchy food, to the excessive use of which I believe most of the indigestions to be due.

AMALGAM AND AMALGAM FILLINGS.

BY THOMAS FLETCHER, F. C. S., WARRINGTON, ENGLAND.

Dr. Black, in referring to the ivory block I mentioned, assumes that the ivory was dry, and says that "the walls of the cavities were found stained." It is quite evident that he never saw the block, although he has troubled himself to write two pages of a homily on the cause of results which only existed in his imagination. As a matter of fact, one plug was absolutely color tight, and the others were more or less leaky in small patches. Dr. Black's homily may, therefore, be set aside. The result was no "conclusion that it is not necessary for any filling to be water tight;" the reason for this is given, and has no connection with the failure of certain operators to make uniformly sound plugs with cohesive gold.

To argue that a defective alloy must be experimented with, is as reasonable as to argue that gold plates must be made of pure gold, before we begin to use a suitable alloy. The additions in both cases being to correct known defects, it is useless wasting time experimenting with materials known to be unsuitable.

On page 154 is the extraordinary statement that "all that has been deemed necessary was to melt together metals, often of unknown degrees of impurity, and then reduce them by the most convenient means, without any special precautions, to filings or shavings." Surely such a state of things as this cannot exist; if it does, the failures are easily accounted for. In my own case, the metals which have a special affinity for each other are first melted and made into separate alloys. The metals are tested separately for certain known impurities, which have an injurious effect, and specially with regard to palladium, which is almost always present in commercial "pure" silver, the presence of 1 per 1000 being sufficient to absolutely condemn the silver. The metals are melted at exact temperatures; each melting is poured into six ingots; these are broken up and re-melted, poured into thin flat ingots in a heavy cold mold, to insure instant setting without separation into sub-alloys, and each of the six ingots is tested at both ends. The plugs made from each sample are kept under observation for several months before they are cut up, and the cutting is done in such a manner that there can be no variation in temperature or treatment. The whole work is a question of absolute precision and absolute uniformity in every detail, as far as physical possibilities permit. For many years the ingots were tested both at the ends and in the middle, but this was found unnecessary, and in the hands of a melter of long experience, with absolutely pure metals, ninety per cent. of the second meltings can be depended on to come out right. I may, in conclusion, state that I only entered this discussion by special request, and that I have no desire to continue it.

THE THIRD MOLAR TOOTH ("WISDOM TOOTH") OF THE UPPER JAW, STUDIED IN 271 CASES, AND COMPARED WITH CRANIAL IRREGULARITIES.

From the records of the Roman Anthropological Society. Translated from the Italian for the DENTAL PRACTITIONER AND ADVERTISER.

Many anomalies that have heretofore passed under the name of irregularities and superfluities of nature, today find their derivation and explanation in modern biology, which studies man by comparison with the other animals, following in the zoological scale the successive phases of all the organs, and which, although unable as yet to solve many questions and explain many phenomena, does not despair, but works on, and gradually becomes more and more enlightened. In investigating this or any other science, there is no fact or phenomenon, however small or unimportant it may appear, the study of which should or could be neglected. It is the observation of apparently small things that has made criminal anthropology what it is today. It is not the result of the empirical observations of the ancients, of the physiognomists, or of the phrenologists, but it is an adult branch of science which avails itself of modern scientific progress, and studies the criminal with intelligence and erudition.

One of the questions of anthropology which has recently come under discussion is the development of the third molar tooth, as compared with cranial defects. Darwin, speaking of this organ, says: "It seems that the wisdom tooth has a tendency to become rudimental in the higher races." Again, "The wisdom teeth in the Ethiopian races are usually furnished with three separate roots, and are generally strong and sound." Prof. Shaauffhausen says that this difference can be explained if we consider that the posterior dental region is always shorter in the civilized races; and this defect may be attributed to the fact that civilized man uses his jaws less than the savage, as his food is chiefly of soft matter, and generally cooked.

Mantegazza, founding his theory upon the result of his own experiments, says that the absence of the third molar is less common in the lower than in the higher races. Doctor A. Levi published, in 1893, the result of his studies made on the military recruits from two districts, concerning the development of the wisdom tooth in relation to high social standing (condition) and cephalic development. There were examined 732 men, who came from two parts of Italy, Lombardy and Ancona. The Lombards, whose average height is 1.646 meters, were found to have an average of 1.34 of third molars. The height of the Anconians does not reach 1.642 meters. Their average number of wisdom teeth is 1.49. As to the social condition, in the farmers the development of the wisdom tooth is more tardy than in the rest of the population. As relating to the cephalic index, the dolicocephalics have more wisdom teeth than the brachicephalics. It is to be noted that the absence of the wisdom tooth is also reported by Lecrere as existing more frequently in small men than in the tall native of the French colonies.

Doctor Mario Carrara, of Turin, assistant to Prof. Lombroso, has studied the development of the third molar tooth in the criminal, and, in the report made to the Royal Academy of Turin, comes to the conclusion that the absence of the wisdom tooth, beside being, as Darwin and Mantegazza have stated, a sign of civilization, is also a characteristic of the criminal. The author has made a study of 397 prisoners between the ages of 19 and 23 years. For brevity's sake we will only give two tables, by the comparison of which, according to Carrara, we will see in the normal man that the third molar is found oftener than in the criminal. Carrara also reports the result of his studies made on 67 craniums of criminals, which belong to the Lombroso collection, and he says that 31.3 per cent. of them have no third molars.

TABLE No. 1.

CRIMINALS BETWEEN THE AGES OF 19 AND 23 YEARS.

Number of Third Molars.	Number of Crania Examined.	Per Centum of the Whole.	Total Number of Third Molars.
0	75	64.5	—
1	11	9.5	11
2	15	13	30
3	10	8.6	30
4	5	4.4	20
	116	100	91

Average number of third molar teeth for each individual, 0.81.

TABLE No. 2.

NORMAL PEOPLE BETWEEN THE AGES OF 19 AND 23 YEARS.

Number of Third Molars.	Number of Crania Examined.	Per Centum of the Whole.	Total Number of Third Molars.
0	9	16	—
1	9	16	9
2	13	23	26
3	8	14	24
4	17	31	68
	56	100	127

Average number of third molar teeth for each individual, 2.19.

This result, placed beside the other, which tells us that the absence of the third molar is a characteristic of civilization, tends to contradict the "degenerative theory" of criminals. Morselli holds that the presence of the *suture metopica* is a sign of perfection; nevertheless, Mingazini found it in 16 per cent. of the criminal population of France, while only 10 per cent. of the normal population had traces of it. The presence of wormian bones in the cranium, with the expansion of the brain which is caused by them, represent a degree of perfection. We are all aware of that fact; but, nevertheless, such eminent students as Lombroso, Sommer, Ranke, Bordier and others, found the bones more frequently in criminals than in ordinary persons. In explanation of all this, says Carraro, let us change our conception of organic evolution a little. "Instead of thinking of it as a gradual, uniform, all-around change for the better, which graphically would be represented by a straight line, let us think of it as a line which in its course presents interruptions, breaks, returning to the starting point in the manner of a spiral." So it is with the so-called regressive evolution. With regressive and inferior characteristics we occasionally find signs of superiority, probably because these beings, without the normal or excessive development of some superior characteristics, could not exist.

Only 271 of the 469 craniums which we have studied were in good condition. Therefore, it is on these that we base the correctness of our calculations. They are all, without exception, craniums of adult and old men. We have divided these craniums into three classes: 1. Craniums very irregular. 2. Slight irregularities. 3. Normal. As to the number of third molars contained in the craniums, we have also divided them in three classes: 1. Presence with both teeth. 2. Absence of one. 3. Absence of both. (N. B.—Only the upper jaw is included in this study.) Three tables corresponding to the three classes are appended. Table No. 1 includes 30 very irregular crania, 10 of which have no third molar, 6 have the molar on one side only, and 14 on both sides. This shows that the more irregular crania are oftener unfurnished with the third molar than those less abnormal. The percentage of crania totally or partially unfurnished with the third molar is 5.384 per cent.

Table No. 2—Slight irregularities. This second class is composed of 54 crania, 30 of which have both the wisdom teeth, 10 on one side only, 14 have none at all. Establishing the percentage, we can clearly see that the crania with slight irregularities have, in a small majority, the complete number of wisdom teeth.

Table No. 3—Normal crania. Of the 189 of which this last class is composed, 104 have both wisdom teeth, 22 one wisdom tooth, 29 have none at all. It is evident that the more irregular crania have a less number of wisdom teeth.

By subtracting the few crania which we have called "uncertain," we will have, of the very irregular ones, 53.33 per cent. totally or partially unfurnished with the wisdom tooth. Of those with few irregularities, 44.44 per cent., and of the normal crania, only 38.09 per cent.

The result of this study tends to strengthen the statement of Carrara, although there is some difference between criminals and men having irregular craniums.

Seeing that the increasing absence of the third molar is parallel with the degree of irregularity of the cranium, why should not we consider this defect as another of the many morphological anomalies found in the degenerate characters? On the other hand, could not the so-called disappearance of the third molar in the civilized races, be one of those exponents of the physical degeneration which is brought by civilization?

CONCERNING VULCANITE.

BY DR. C. A. ALLEN, BUFFALO, N. Y.

Read before the Second District Dental Society of the State of New York, March 11, 1895.

The physical changes which vulcanite undergoes during the process of its becoming a solid body, I think, are little understood. At any rate, the remedy for many of the evils of unscientific treatment is too rarely employed.

To begin with, let us briefly consider the elementary character of this body. The gum, as it comes to the manufacturer, is purely a vegetable compound — a hydrocarbon — made up of $H_{10}C_7$ (however, upon these proportions authorities differ, but not to the injury of our argument).

Sulphide of mercury, which renders the body of use in our art, is now added in the proportions of one to two of rubber. We now have a compound which, when properly treated, produces a uniformly dense and sufficiently strong base for our purposes.

Some of our high attenuationist friends of "little pill" fame boldly declare red vulcanite plates to be the origin of all obscure physiological derangements, charging as they do that the coloring pigment is red oxide of mercury, which is highly irritating to mucous tissue. The absurdity of this charge is clearly manifest when it is stated, as a matter of fact, that our coloring pigment is simply sulphide of mercury. This preparation possesses no toxic or even distributing physiological effects whatever, and may be brought into mucous contact with impunity.

Experimentation by thorough processes, aided by the most delicate instruments, has demonstrated that the quantity of mercury which it is possible to evaporate from a vulcanite plate, before actually destroying the body itself, is only infinitesimally small. It should be remembered that in order to have even this slight manifestation of the "enemy's" presence a high degree of heat must be attained, a condition which could not be sanely looked for in the human mouth.

In the process of vulcanization it is readily conceded that we first have fusion of the component parts of the body under treatment, which occurs at certain definite temperatures.

What are these points of fusion?

Any work on chemistry will place you right on the melting point of the sulphur in the mercury compound,— and that will be 237°+F. As to the melting point of hydrocarbon compound (rubber), elaborate experiments by Dr. A. P. Southwick prove, beyond the possibility of controversy, that this will be at 248° F.

Now, with the component parts of our body all fused, we may naturally expect the commencement of that remarkable and little understood physical change in the compound which we term vulcanization. That this change does not begin at once upon the fusion of the compound's ingredients, and that vulcanization, as we understand it, may be fully completed without the addition of a single increment of heat, is easily demonstrated. All that possibly could be required in addition to the present conditions would be a continuation of the 248° to 250° F. over a longer period of time. If doubt exists in the mind of any one present as to the truth of this statement, let me suggest to him that he can easily obtain a "lazy man's proof" of it by asking any manufacturer of rubber garments how he treats the articles as to temperature, time, etc.

Continuing in my quotations of the authority mentioned, I fearlessly make the statement that the actual destruction of vulcanite begins at 300° F. and continues in proportion as the temperature is raised to 600° F., where rubber will be entirely dissipated, the sulphur being affected in the same manner at 824° F.

Now, a word in regard to vulcanizers and their use. It should always be borne in mind that the degree of heat indicated by the mercury bath thermometer *never* registers the degree of heat corresponding to that of the inside of the vulcanizing pot, where the case is being treated. The figures for this statement are as follows: If the stratum of atmosphere inclosed in the pot above the water line (when the cap is adjusted) is not expelled upon a degree of heat sufficient to generate steam being reached, we can always confidently rely upon our thermometer registering from 15° to 18° F., according to the amount of water, below that actually existing within the chamber. Not only this, but we must always be prepared to take into account a considerable loss of registering power of the thermometer through the radiation of heat, the convection of air currents, temperature of room, etc. To these influences you can always safely charge a loss of registering power of the thermometer of at least 15° F. and usually more, often 20° F. If these figures can stand verification, and I declare that they can, what will be the result? Simply this: the man who does not expel the atmosphere from the pot really subjects his case to at least 30° F. of temperature more than that indicated by the thermometer. If he does expel the atmosphere he still has 15° F. more than that registered. From this point our deductions are easy. We have declared that the destruction of vulcanite begins at 300° F. actual. As an illustration of this point, let us imagine a case being treated at the old-fashioned 320° F. without regarding these two influences. The result is easy. Instead of 320° F. we have at least 350° F. If the stratum of atmosphere *is expelled* we still have 335° F. to which our case is being subjected. If these figures and those preceding them are correct, we find ourselves treating vulcanite anywhere from 50° F. down to 35° F. above where the destruction of the compound actually begins. We are now asked what will be the manifestations of this unscientific treatment of the most abused and least understood body in the dental world. Every child in the land associates with rubber the property of elasticity, and that to the degree of exceeding in this respect any other body known to him. Do the high-temperature plates retain this characteristic? By no means, and, on the contrary, they have entirely lost it. Why? Because the extreme temperature to which they have been subjected has destroyed this natural inherent characteristic.

The early workers of vulcanite will tell you that today we cannot produce a plate which can be constricted at the heels, as they "used to do," and thereupon see it return to its former relations. The reason for this is obvious. The pioneers in vulcanite were instructed to vulcanize at a low temperature, about 280° F. Besides this, the machines placed upon the market at that date were so constructed that the heat was carried up and redirected upon the pot, thereby losing but little by the convection of air currents and radiation. If this be true, we now have to account only for the loss of the registering power of the thermometer by virtue of the stratum of air left in the pot. We have stated this in degrees to be equal to 15° F. to 20° F. This reasoning will easily solve the true degree of heat to which the case was subjected, and at the same time demonstrate why that property of elasticity was not lost in the work of the vulcanite pioneers. The next manifest injury to the base for our purposes will be in its extreme contraction. It should be borne in mind that vulcanite is affected by thermal changes more than any other solid body. Its rate of expansion in ordinary temperatures is somewhat over six times that of iron, about five times that of brass, and nearly four times that of zinc. This extraordinary expansion upon the application of heat will conversely manifest itself by contraction when the opposite thermal condition is applied. How and where will this extreme contraction be manifest in dental plates? If your case be of the stupidly contrived "gum sections" it can express itself only at one point, namely, by a contraction at the "heels," and a consequent raising of the body from contact with the model, most manifest at the posterior part, but really extending itself well anteriorly. How can this be demonstrated? There is but one way. Preserve your model after vulcanization, and restore the plate to it, when the extreme degree of contraction will be only too manifest. The base will have no manner of contact at its posterior part with the model upon which it was vulcanized. This contraction in case of the use of "gum sections" with properly ground joints must necessarily be at the rear, as the arch cannot be crushed. In the use of "plain teeth" the contraction is diffused throughout the entire plate, and consequently does not appear so prominently at the point mentioned.

The question may be asked, "How can the model be preserved?" This is perfectly easy. As soon as the temperature is reduced to the proper point, open the flask, remove the denture from the model, and at once place the model over a gentle heat for a time sufficient to expel all moisture.

Another result of excessive temperature in vulcanization, and the inevitable contraction in the molecular rearrangement which will follow, may manifest in cracked sections or "chipped" joints.

Still another condition may present the case with one or more "spongy" points, usually to be expected at the thickest part of the body. The writer's deductions from the foregoing are that all bodies of vulcanite treated at a temperature above 300° F. (actual) will show—

1. Destruction, increasing proportionately with temperature elevation, and loss of elasticity.

2. Extreme contraction, resulting in the plate having no membraneous contact across the posterior part.

3. Broken or cracked sections, or "slivered" at joints.

4. Sponginess of vulcanite at thickest portions, which may be manifest over a considerable surface, or may appear only at certain points in size and shape quite like a split pea.

Remedy.—Any or all of the foregoing results may be obviated by maintaining a temperature within the vulcanizing pot throughout the entire period which shall not exceed 300° F.—*Dental Cosmos.*

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The thirteenth annual meeting of the National Association of Dental Faculties was held at the Grand Union Hotel, Saratoga Springs, commencing August 1, 1896.

The following colleges were represented:

Birmingham Dental College—T. M. Allen.
University of Denver, Dental Department—W. E. Griswold.
Columbian University, Dental Department—H. C. Thompson.
National University, Dental Department—J. Roland Walton.
Atlanta Dental College—Wm. Crenshaw.
Southern Medical College, Dental Department—Frank Holland.
Chicago College of Dental Surgery—T. W. Brophy and Louis Ottofy.
Northwestern College of Dental Surgery—L. L. Davis.
Northwestern University Dental School—Theo. Menges and Geo. H. Cushing.
Indiana Dental College—G. E. Hunt.
Louisville College of Dentistry—Francis Peabody.
Baltimore College of Dental Surgery—B. Holly Smith.
University of Maryland, Dental Department—F. J. S. Gorgas.
Boston Dental College—J. A. Follett.
Harvard University, Dental Department—Thos. Fillebrown.
University of Michigan, Dental Department—J. Taft.
Detroit College of Medicine, Dental Department—G. S. Shattuck.
University of Minnesota, College of Dentistry—Thos. E. Weeks.
Kansas City Dental College—J. D. Patterson.
Western Dental College—D. J. McMillen.
Missouri Dental College—A. H. Fuller.
University of Buffalo, Dental Department—W. C. Barrett.
New York College of Dentistry—Frank Abbott.

Cincinnati College of Dental Surgery—W. T. McLean.

Ohio College of Dental Surgery—H. A. Smith.

Cleveland University of Medicine and Surgery, Dental Department—S. B. Dewey.

Western Reserve University, Dental Department—H. L. Ambler.

Pennsylvania College of Dental Surgery—C. N. Peirce.

Philadelphia Dental College—T. C. Stellwagen and S. H. Guilford.

University of Pennsylvania, Dental Department—E. C. Kirk.

University of Tennessee, Dental Department—J. P. Gray.

Vanderbilt University, Dental Department—H. W. Morgan and W. H. Morgan.

University College of Medicine, Dental Department—L. M. Cowardin.

Royal College of Dental Surgeons of Ontario—J. B. Willmott.

The following Colleges were elected to membership:

Howard University, Dental Department, Washington, D. C.—James B. Hodgkin.

Marion Sims College of Medicine, Dental Department, St. Louis, Mo. —J. H. Kennerly.

Dental Department of Tennessee Medical College, Knoxville, Tenn.—R. N. Kesterson.

The following applications for membership were reported favorably by the Executive Committee for final action next year:

University of Omaha, Dental Department, Omaha, Neb.; Ohio Medical University, Dental Department, Columbus, O.; Baltimore Medical College, Dental Department, Baltimore, Md.; Dental Department of Milwaukee Medical College, Milwaukee, Wis.

The New York Dental School announced its intention to complete its application next year.

The report of the secretary stated that there were in the United States fifty-three institutions teaching dentistry or conferring the dental degree, as follows: Dental schools in active operation, forty-six; organized during the year, two; in course of organization, one; corporations conferring the dental degree, four. Of the dental colleges, thirty-six were now members of the association, eight had applications for membership pending, two had signified their intention of applying, and the two newly organized have announced in their catalogue their intention to comply with the rules of the association.

The report of the Committee on Schools, presented by its chairman, Dr. Follett, stated that reports had been received from thirty-five schools as to their equipment under the resolution adopted last year. These reports showed that the schools were well provided with lecture-rooms, and in most instances with ample laboratory and dispensary accommodations, with sufficient and appropriate appliances. They indicate a broadening in the general course of instruction, as well as fuller courses in all departments. Several colleges have recently added courses in bacteriology and extended their work in histology and pathology in practical ways. During the year 1895–1896 the number of matriculates at the thirty-five colleges reporting was 5532; graduates, 1363.

Mr. Melville Dewey, secretary of the Board of Regents of the University of New York, appeared before the association by invitation of some of the members, and gave a masterly address on the needs of the movement for higher education in professional ranks. Incidentally, Mr. Dewey explained some of the details of the system pursued in New York, and stated that, greatly to the surprise of those in charge of the various professional educational institutions in the State, the number of students had steadily increased since the higher requirements had been put into force by the Board of Regents.

Among the more important legislation enacted by the association were the following:

REGULATING THE ADMISSION OF STUDENTS.

Preliminary Examination.

The following preliminary examination shall be required of students seeking admission to colleges of this association:

.... HIGH SCHOOL.
.... 189

To the Faculty of ....

M .... desires to present ... ..self as a candidate for admission to the Course of Dentistry, ...

He has pursued in this school the branches against which numbers appear—the numbers being the standings upon a scale of 100. Our course requires five recitations or exercises weekly, in each branch. Our terms are ten weeks in length.

PRELIMINARY.

2 terms Orthography, standing.
2 terms Reading, standing.
2 terms Writing.
2 terms Arithmetic.
2 terms Geography.
2 terms Grammar.
2 terms History U. S.
—
14

These are required in all cases, and fourteen counts given for the same.

ELECTIVE.

3 terms University Algebra through Quadratics.
1 term Commercial Arithmetic.
2 terms Astronomy.

3 terms Geometry, plane and solid.
2 terms Physiology.
2 terms Physical Geography.
1 term Botany, with analysis of forty plants.
3 terms General History.
3 terms Natural Philosophy.
3 terms English Literature.
2 terms Civil Government.
2 terms Rhetoric.
2 terms History of England.
3 terms American Literature.
3 terms Chemistry.
2 terms Geology.
2 terms Natural History.
1 term Political Economy.
2 terms Drawing.
3 terms German.
3 terms Greek.
3 terms Latin Reader; Cæsar.
3 terms Cicero, four orations.
3 terms Virgil, six books.
1 term Book-keeping.
3 terms French.
2 terms Manual Training.

(After session of 1901–1902 U. S. History becomes elective, and entitles to 2 credits.)

FOR THE SESSION OF 1897–1898.

Preliminary,	14 counts.
Elective,	18 counts.
Total	42

FOR THE SESSION OF 1898–1899, 1899–1900.

Preliminary,	14 counts.
Elective,	27 counts.
Total	41

FOR THE SESSION OF 1900–1901.

Preliminary,	14 counts.
Elective,	36 counts.
Total	50

For the session of 1901–1902 and thereafter no Preliminary credits; forty-eight credits from the studies classed as elective.

When the text-book mentioned has not been completed, the exact amount of work done should be stated.

The candidate above named is recommended as of good moral character, studious habits, and, judging from the past records, able to carry forward the work of a dental college course.

The rules for the admission of students take effect with the session of 1897–1898.

.... Principal.

ADMISSION TO ADVANCED GRADES ON CERTIFICATES.

The colleges of this association may receive into the advanced grades of juniors and seniors only such students as hold certificates of having passed examinations in the studies of the freshmen or junior grades respectively, such certificates to be pledges to any college of the association, to whom the holders may apply, that the requisite number of terms have been spent in the institutions by which the certificates were issued.

INTERMEDIATE CERTIFICATE.

Place Date.

This certifies that..................has been a member of the..................
class in the..................during the term of......................................

He was examined at the close of the term in the required studies, as stated herein, and is entitled to enter the

Freshman Year.	Junior Year.
[List of Studies.]	[List of Studies.]

This certificate shall, by correspondence, be verified by the dean of the college by which it was issued. Without such certificate no student shall be received by any college of this association for admission to the advanced grade, except on such conditions as would have been imposed by the original school, and these to be ascertained by conference with the school whence he came.

LIMITING THE TIME FOR THE RECEPTION OF STUDENTS.

No member of this association shall give credit for a full course to students admitted later than ten days after the opening day of the session, as published in the announcement.

In case one is prevented by sickness, properly certified by a reputable practicing physician, from complying with the foregoing rule, the time of admission shall not be later than twenty days from the opening day.

In cases where a regularly matriculated student, on account of illness, financial conditions, or other sufficient causes, abandons his studies for a time, he may re-enter his college at the same or subsequent session, or where under similar circumstances he may desire to enter another college, then with the consent of both deans he may be transferred, but in neither case shall he receive credit for a full year unless he has attended not less than seventy-five per cent. (75 per cent.) of a six months' course of lectures.

ATTENDANCE, EXAMINATIONS.

Attendance upon three full courses of not less than six months each, in separate academic years, shall be required before examination for graduation. The year shall be understood to commence August 1, and end the following July 31.

Beginning with the session of 1896–1897, the examinations conducted by the colleges of this association shall be in the English language only.

A student who is suspended or expelled for cause from any college of this association shall not be received by any other college during that current session. In case the action of the first college is expulsion, the student shall not be given credit at any time for the course from which he was expelled. Any college suspending any student shall at once notify all other members of this association of its action.

APPLICATIONS FOR MEMBERSHIP.

Applications for membership in this association shall be made in writing, favorably indorsed by the faculties of two or more colleges of the association and the Board of Dental Examiners of the State in which it is located.

Such application shall then be referred to a special committee of three, which shall be appointed by the chair upon each application. The duty of this committee shall be to visit the school applying during its session, personally examine its facilities for teaching, methods of instruction, and efficiency of the faculty, and report to the executive committee, which report shall, if favorable, be acted upon.

Each application shall be accompanied by a sum of money sufficient to defray the expenses of the special committee.

The constitution was so amended that hereafter it will require a two-thirds vote, instead of a majority, to elect new members.

The following resolution, offered by Dr. Peirce, was on motion adopted:

WHEREAS, In view of various reports frequently being circulated derogatory to the character of certain schools, without any one being willing to prefer charges sustaining such statements,

Resolved, That the executive committee be and is hereby authorized to exercise full power to investigate all such innuendoes or charges by visiting the school or schools, or authorize some one to perform this duty; summoning witnesses, etc., in order that all such statements shall be sustained or proven false.

Resolved, That a sum to be determined by the officers, president, secretary, and treasurer, be and is hereby appropriated for the purpose of paying expenses essential to the carrying out of the provisions of the above resolution.

The following communication from the National Association of Dental Examiners was read, and on motion adopted:

Resolved, That this association requests the National Association of Dental Faculties to enact a rule prohibiting colleges from receiving beneficiary students recommended by State boards and associations.

The following, offered by Dr. Abbott, was adopted:

Resolved, That the committee of three appointed by the chair to report on applications for membership, shall determine and report to this association, at its next meeting, the minimum requirements of such colleges as desire to become members of this association as to length of course, plant, equipment, facilities for teaching, and the number and efficiency of its faculty.

Dr. Brophy offered the following, which was adopted:

Resolved, That a graduate of a recognized dental college, who applies to a college of this association for the degree of Doctor of Dental Surgery or Doctor of Dental Medicine, shall complete one full course of instruction in said college and comply with all other requirements of the senior class.

The following lie over till next year for final action:

Offered by Dr. Barrett:

Resolved, That after the regular session of 1897–1898 the annual college term for the members of this association shall be seven full months.

Resolved, That it is advisable that the National Association of Dental Faculties in future meet in connection with the National School of Dental Technics, at a time of year when the colleges are in session, and before the time for the issuance of the annual catalogues.

A committee, consisting of Drs. Patterson, H. W. Morgan, and Kirk, appointed to consider the advisability of adopting the academic cap and gown for commencement day, reported in favor of adopting the intercollegiate system, and in favor of lilac as the distinguishing color for dental schools. Laid over till next year.

The following were elected officers for the ensuing year: J. P. Gray, Nashville, Tenn., president; Truman W. Brophy, Chicago, vice president; Louis Ottofy, Chicago, secretary; Henry W. Morgan, Nashville, Tenn., treasurer; J. Taft, Cincinnati, Thomas Fillebrown, Boston, and B. Holly Smith, Baltimore, Md., executive committee; H. A. Smith, Cincinnati, Thomas E. Weeks, Minneapolis, and J. D. Patterson, Kansas City, Mo., *ad interim* committee.

The newly elected officers were installed, and the president announced the standing committees as follows: S. H. Guilford, Philadelphia, Pa., J. B. Willmott, Toronto, (Canada), Theodore Menges, Chicago, Ill., L. M. Cowardin, Richmond, Va., and James Truman, Philadelphia, Pa., committee on text-books; J. A. Follett, Boston, Mass., G. E. Hunt, Indianapolis, Ind., C. N. Peirce, Philadelphia, Pa., A. H. Fuller, St. Louis, Mo., and D. J. McMillen, Kansas City, Mo., committee on schools.

Adjourned.

CORRESPONDENCE.

LETTER FROM PROFESSOR THOMAS E. WEEKS,

Dean Dental Department University of Minnesota.

Editor Dental Practitioner:

As I reflect upon the action of the Association of Dental Faculties, and the spirit evinced by the members, I am impressed with the fact that we, as educators, have much to congratulate ourselves upon, and I am impelled to suggest that it might be well to acquaint the profession, through the columns of your journal, with the action of the Association regarding the elevation of the standard of preliminary education. It seems to me that no action has been taken since the extension of the course to three years, that will improve the status of dentistry so much.

It must have occurred to all educators that a grammar school education is a small foundation upon which to rear the edifice of a training sufficient for membership in a learned profession. While it is certain that the desired status can not be reached at one bound, the gradual advance assured by the action of the Association is the safest way to reach the proper position.

Those of us who are associated on the campus with teachers and students of other collegiate departments, are made to feel the littleness of our entrance requirements as compared with theirs, and we can not question the justice of their criticism. Every man of small preliminary education, who is a success in his profession, can but feel how much more he might have been had he a better foundation.

The Colleges of the Association having adopted a gradual increase in the number of counts required in the elective studies, until the standard of a high school course is reached, it is now incumbent upon us to encourage such a selection from these elective studies as will be of the greatest subsequent benefit to the dental student.

Knowing that you are much interested in this work, I should like to see something from your pen which will set a ball rolling that shall gather size and impetus, until it knocks out of the way all complacent satisfaction with a low standard of preliminary education for the dentist.

There is one other thing which I think would result in great good to the Association, and that is the evident desire on the part of yourself and many others, to hold the meetings of the Association independently of the American Dental Association. It seems to me that a better time for our meetings would be in the winter, while the colleges are in session. If they were held in cities where colleges are located, we would gain much by observing methods of instruction in the several schools. The School of Technics should meet with us. The two bodies are in such close sympathy, they have so much in common, both being associations of teachers, the one so completely supplements the other, adding the mechanical training to didactic instruction, that their association naturally suggests itself.

The Association has done much for the elevation of the status of dental education, and it has a great future before it. Let us not lose any of the benefits of the great step taken in 1896.

Yours sincerely,

THOMAS E. WEEKS.

LETTER FROM PROF. HOFHEINZ.

Lehrbuch der Conservirenden Zahnheilkunde, von Prof. Dr. W. D. Miller.

Editor of the Dental Practitioner and Advertiser:—The "Recensions Exemplar" of Prof. W. D. Miller's book on "Operative Dentistry" has been duly received, and it is with much pleasure that I give you and your readers a short resumé of this valuable work.

It may be a surprise to some of our American confrères that Prof. Miller should have written a work on operative dentistry at all, with the fact existing that the dental profession is now in possession of numerous good works on that subject.

We American dentists have learned to look upon Prof. Miller as the man pre-eminently qualified to deal with those subjects of dental science which still remain in doubt as to their etiology, etc.

He has made his name immortal in presenting to the dental and medical world his famous work on the "Micro-organisms of the Mouth," thus forever settling the discrepancy which has existed as to the etiology of dental caries; and the American dentists have hoped to receive from him the final say on such important subjects as: Pyorrhœa Alveolaris, Erosion, etc.

We must understand, however, though we claim Prof. Miller as "Our own Miller," that he is professor at a German University, and that his students had a right to demand his labor in the most compatible field to the general dentist, Operative Dentistry. In the preface the author tells us that of the numerous German works on dentistry, the relative amount devoted to Operative Dentistry proper is unusually and unjustly small.

Nessel (1840), devotes 16 pages to Operative Dentistry.

Pfefferman (1862), devotes 8 pages to Operative and 72 to Mechanical Dentistry.

Blume (1836), disposes of Operative Dentistry on 4 pages.

Sindener (1851), 14 pages.

Scheff (latest work), devotes more than double the amount to Prosthetic Dentistry than he gives to Operative Dentistry.

This explains to the American reader how sadly in need the Germans were of a comprehensive work on Operative Dentistry. It is this reason also that justified and necessitated the edition of this book, though as Prof. Miller writes in the preface, "his state of health has not permitted him to look over all the proof sheets." The book is made up of 412 pages, printed in Roman type, on beautiful paper. The very first thing that strikes the reader of the work is the numerous classifications of the different subjects, and their detailed sub-classifications. They are the most excellent known to me, and greatly facilitate the study of the work.

The book is called, "Lehrbuch der Conservirenden Zahnheilkunde." It adheres strictly to its title, omitting extraction, and, I am sorry to say, all plantations of teeth, a subject I should very much like to have seen embodied in the work.

The five great chapters of the work are :

1. Therapy of the defects of the hard substances of the teeth.
2. Therapy of the soft dental tissues: pulp and pericementum.
3. Cleansing and bleaching of teeth.
4. Prophylactic treatment of the teeth.
5. Treatment of deciduous teeth.

Under Therapy of the defects of the hard substances of the teeth, we find the following sub-classifications:

TREATMENT OF CARIES WITHOUT FILLING.

This chapter treats of the use of *argentum nitricum* according to Stebbins, and the application of heated paraffine over the cleansed surfaces of decay.

It dwells on the different methods of filing and grinding, also on extraction as a means of preventing decay in specific cases.

FILLING OF TEETH.

This begins with a very comprehensive and thorough treatise on the different filling materials.

It must be of great interest to the American reader that the author gives copper amalgam a very prominent place among the permanent filling materials. The experiments which Prof. Miller, together with Dr. Jung, have made, have proven that the copper is not affected if in contact with an electropositive metal. They have, therefore, put in 2½ to 3 per cent. of tin foil, thus adding largely to the durability of the copper amalgam.

Clinical experiments have proven the theory correct, and it is to be desired that our American manufacturers begin to prepare their copper amalgams accordingly.

The instruments and their method of using is next dwelt upon, followed by an excellent article on "The Sterilization of Instruments." This subject has never received proper care in any of our text-books, and the author has given the readers a thorough lesson thereon. This is followed by methods of applying the rubber dam, accompanied by numerous half-tone photographs. Cavity preparation and the treatment of hypersensitive dentine receive profound attention.

Next in order are the chapters on the different methods of gold fillings, tin and gold, which are accorded an unusual prominence in the work, the manipulation of the plastics, and porcelain inlays.

Fillings are next considered according to the usual classification of cavities, accompanied by a number of excellent illustrations.

With all due regard to the excellence of the operative part proper of the book, the second division, dwelling on the "Therapy of the Soft Dental Tissues," shows us more intimately Prof. Miller, the author of the "Micro-organisms of the Mouth." The treatment of pulp complications and pericementitis is the most excellent known to me in any language. It is written in that graphic style which characterizes the "Micro-organisms of the Mouth," a style rarely found in German professional works, and second only to Hyrtl's famous "Topographic Anatomy."

The chapter on Pyorrhœa Alveolaris is short, and the author states his known views of the cause of the disease, namely:

1. Predisposing conditions.
2. Local irritation.
3. Bacteria.

It is followed by a capital enumeration of the manifold causes of Odontalgia. The bleaching, cleansing and general prophylactic treatment of the teeth are dwelt upon comprehensively, and the book closes with a brief chapter on the treatment of deciduous teeth.

The illustrations of the work are very profuse and extremely instructive. They consist of half-tone photographs, wood engravings, and a few reproductions from pen and ink. The wood engravings are only equalled by the excellent illustrations in Ottolengui's book on "Methods of Filling Teeth." We may differ with the author in minor details of operative dentistry in this country, but the book as a whole is a work which is not only needed in Germany, but also in America, where we are sadly lacking a work on operative dentistry, which embraces not only the operative technics, but also the Therapy of the pulp, its complications and their consequences, according to modern researches and modern scientific investigations.

I sincerely hope that the work will be made accessible to the American Dental Student by a proper and careful translation.

Very truly yours,

R. H. Hofheins.

THE DENTAL PRACTITIONER
AND ADVERTISER.

DR. W. C. BARRETT, ... EDITOR.

BUFFALO, N. Y., OCTOBER, 1896.

THE NATIONAL ASSOCIATION.

There is no use in mincing matters about our National Dental Association. It is petering out. Common-places and platitudes concerning the duty of dentists to sustain it, and the perfection to which it might be brought if dentists only would sustain it, and what a lovely thing it would be for all to sustain it, are very nice, but the plain, bold fact is, they do not, as it is at present conducted, consider it worth sustaining, and until it is made more attractive to them they will continue to regard it with indifference. There are a faithful few who make the annual pilgrimage to the place of meeting from a sense of duty, but this trusty Old Guard cannot fight the battle when deserted by the rank and file.

Each year has witnessed the withdrawal of some who can ill be spared. Each year reëchos the vow from others that they will not again fool away their time and money. Plain words are best, and the cold facts are that the American Dental Association has become chiefly remarkable for the side-shows that are run in connection with it. Few papers are read, and the most of them are not remarkable for original research. There is no encouragement to write papers, for when one is presented few will listen to it, and of those few a considerable proportion will talk to hear their own voices, and not because they have anything special to say. The politicians who travel hundreds of miles for the mere satisfaction of laying and pulling wires are rarely, if ever, present at the reading of a paper upon any scientific subject. And so discussions go by default, and there is seldom a ripple upon the placid surface, until one of the side-shows is exhibited in the arena, and the crack of the ring-master's whip is heard.

We shall be accused of writing a Jeremiad, and truth compels the admission that we are in the mood of Lamentations. We are not willing to see the Association that has for so long a time been the highest court of dentistry, become the tool of designing, or the toy of listless men. A society cannot be made the representative of thoughtful, educated, erudite men, when the dominant ideas are those of the inconsiderate, the illiberal, the illiterate. Scientific papers will not be presented when they are treated as a bore. When men from mere personal ambition secure the places that should be filled by active workers, and retain them year after year without doing anything, simply because none of their confrères care to remind them that they are barnacles waiting for a sense of the eternal fitness of things to overtake them, it is the society itself that suffers. There are men who have for years been chairmen of sections, and who have scarce put forth an effort. There are others, it must in justice be said, chairmen of sections for years, who have labored faithfully and earnestly, but to little purpose, because they have not been sustained.

What is the matter? What should be done? How can the present unsatisfactory condition be remedied? There will be difference of opinion as to the steps to be taken, but it would seem that all must agree as to the wisdom of a few suggestions. In the first place, it ought by this time to be demonstrated that the men who have so long dictated the policy of the Association, and under whose guiding hands it has steadily gone down, down, until there are few to do it reverence, should be retired. They have proved their incompetence to conduct a scientific association on many disastrous fields. They may be abundantly qualified to manage the business affairs of such a body of men, but that is not what makes a professionally representative sodality. They will never retire of their own accord, nor will they ever cease to intrigue for the maintenance of place, a work in which they have become skillful from long practice, and so the outlook is not a brilliant one.

In the second place, the methods and systems that have proved so unsuccessful should be abandoned, and others tried. We cannot do worse by almost any system. Whatever the change shall be, it can scarcely fail to be for the better. The old section system, for instance, has been a mere farce for years. No meetings of the sections are ever held, nor have any worthy the name ever been held. Why do we cling to it? Heaven perhaps knows. It is beyond the power of human ken. Some years since a committee of old members was appointed to present some new scheme. That committee gave a great deal of thought to the matter, labored two years at it, and finally presented a fully digested scheme for the betterment of affairs, which at least presented the negative advantage of not having been tried and found lacking. The report was presented, but it did not suit the convenience of some of the leaders to have it considered, and it has been quietly shelved from year to year. It is time that something was done.

In the third place, the side-shows should be eliminated, and the American Dental Association should stand upon its own merits. If it cannot stand alone, let it fall to earth and evermore lie there. It should also be relieved from the distracting presence of the meetings of the National Association of Dental Faculties, and the National Association of Dental Examiners. Some of the most valuable members of the A. D. A. belong to these organizations. Their interest in them is even more vital than in that of the old Association. They unconsciously place the latter in a secondary place, and their best efforts are devoted to the other societies. Those meetings are held first, and, as the editor of *The Dental Review* so pertinently says, their members come to the A. D. A. meetings fagged out, their minds completely occupied with other matters than those which should then engage their attention.

But especially should the American Dental Association be relieved of the Dental Protective Association and its affairs. Regularly we see that body, which should have no more connection with the Association than the woolly horse, or the Raines Liquor Law, dragged in to take up valuable time, usually just at the period when there is a dangerous probability of an interesting discussion of some scientific problem. Its meetings, which all concede to be desirable, should be held at some other time, and the A. D. A. should be given a rest.

Then the Association should be relieved of the hucksters, and fakirs, and peddlers of every gimcrack notion under the sun. One cannot escape these button-holers, who lie in wait at every corner. At the late meeting at Saratoga one of them, whose zeal was without discretion, pushed his patent process to such nauseating lengths that there was a reaction, and the thing blew him into the air. When it was not the dental fakir who disturbed his peace, the member found himself in the range of the photographer's camera, whichever way he turned. These things must be sternly repressed if our meetings are to amount to anything.

The reputable manufacturers of dental goods do not fall within this category. A reference is intended only to the small-beer peddlers, and the notion vendors who infest the meetings. And yet, we sincerely question the profit, either to the association or the exhibitors, of the great displays of dental goods at our meetings. If one manufacturer goes, others must, while if all would stay away they would sell as many goods during the year as now. Those who are attracted to the meetings because it gives an opportunity to buy material, are of no use to the association, which would be better off if they remained away.

A new departure must be made if the A. D. A. is to live. We must get out of the rut in which we have so long been running. We want managers who are not managing it for what there is in it. We want men who are dissociated from trade, and who are professional men only, first, last, and all the time. We need to abandon old time and discredited methods. We must elect men—— well, in the election this year there were some symptoms of a new departure. James Truman was made president, and we have not yet ceased to wonder. He has never been the protege of the politicians. In fact, he despises them as only he can detest detestable men. He has ever been devoted to the scientific and higher professional interests of dentistry. He has a mind of his own, and is not afraid to express it, regardless of consequences. Such men do not ordinarily attain to places of power and honor, and Dr. Truman has heretofore usually served in the ranks. But his merit was too conspicuous to be longer overlooked, and lightning struck the tall tree.

Next year the meeting is called to meet at a detestable place, in August, in the hope that our numbers may be recruited by consolidating with another society. We hope for good, but are not over-sanguine. It is by no means certain that it is advisable to wipe out the "Southern." That society has done good work in the past, and is capable of good for the future. The territory covered by both that and the American is too great for one society. Members must sometimes travel too far, and the representation would be too incomplete. We would lose members from both, and together they would be little more than either is now. Northern men could not go south during the heated term of summer, and it would not do to have all the meetings in one section. It would afford us a sincere gratification to meet our Southern brethren each year in joint meeting, but great as would be the pleasure, if it is to be purchased at the expense of the existence of the only association in which many of them have their sympathies really interested, it will be paying too much for the whistle. While we will gladly coöperate with others in anything that shall be generally deemed for the interest of dentistry, we would much rather see the American Dental Association built up in some other way than at the expense of the Southern.

Well, we have had our grumble, and our mind is a little relieved. We think there is some truth and some incentive to thought in the suggestions presented. We all wish to do what is best, even if we do not agree upon the methods to reach it. But there is one thing that no one can cavil at, and that is the earnest resolution on the part of every member to do what he can to make the next meeting a success, and to give the good old A. D. A. one more trial, in the hope of better things and a better time.

OUR EDUCATIONAL SYSTEM.

The communication of Prof. Weeks, which appears in this number, came too late, or we should have simply written him, and demanded that he perform the task that he has so kindly assigned the editor of the journal. We will not assert that he purposely withheld his letter until so near the time of publication that there was no opportunity to do anything else than to comply or refuse, but by his delay he made himself liable to such a charge.

There is no denying the fact that the National Association of Dental Faculties has brought about reforms that would have been impossible to anything except concerted effort. When it was organized, dental educational methods and dental colleges were far from being what they should be. There was rivalry instead of emulation among them. There was no general standard of preliminary requirements, and each one gave what instruction seemed convenient, and graduated students at the end of a course that was prescribed by themselves, without any supervision whatever. It seems incomprehensible that professional instruction in law, medicine, and all the liberal professions, should so long have been left to irresponsible and too often unqualified men, who held the keys of admission to high positions, and opened the gates to whomsoever they would.

It is strange that this unguarded authority was not abused more shamefully than it was. Occasionally, in medicine, a Buchanan sold diplomas to the highest bidder; there was a Delavan, Wisconsin, dental college that advertised diplomas as it might any other vendible commodity, but except that the standard was depressed to the lowest practicable point, there was less of what might be called professional villainy extant than should have been expected. It was a too common practice to accept students who were not sufficiently erudite to comprehend real professional lectures, but the standard of education was obligingly adapted to that of the preliminary requirements, and students were not bothered with that which would have been incomprehensible to them. It was impossible to raise either criterion, because each school was afraid of the others, and there was none of that mutual confidence which permits the keeping of a common agreement.

All that has been changed by the confederation of the colleges into a body that can compel obedience to its mandates. The term was lengthened. It was thought that this must inevitably result in the loss of students, who would not stay six full months. To the astonishment of all, the matriculants were more than they had ever been before. The course was extended, from two to three years. This, it was asserted, would be certain ruin to most of the schools. Strange to say, every existing school doubled its numbers within a very short time. Regulations demanding a higher standing of preliminary requirements were adopted, and now the wiseacres predicted that this must inevitably result in diminished attendance. Lo, and behold, with every elevation of the standard the number of students increased. New colleges were opened, with high requirements, and those which demanded most attained the highest success.

If the history of the past is worth anything, it is absolutely demonstrated that the road to prosperity on the part of a college is by the way of a high standard. Students have learned that the best college is that which takes only the best men. It is that which demands the most, and which gives the most. And not only is this demonstrated in dentistry, but sister professions have found it true. Medicine has advanced its stakes wonderfully. In the State of New York all the best and most flourishing schools have changed their course to four years, and they have invariably found their profit in the increased attendance of a far better class of men. This advance has been a voluntary one, made because the schools not only believed that the interests of the profession demanded it, but because their own good would be subserved by the change.

And yet, notwithstanding these incontrovertible truths stare them in the face, a considerable number of our dental schools, members of the National Association of Dental Faculties, oppose any advance in preliminary requirements, because they urge that their pupils will not stand it. Is their community not sufficiently intelligent to comprehend the necessity for an educated profession? Are the people from whom they must draw their support so wholly illiterate that if they demand a fair academic education as a pre-requisite to matriculation they will receive no students? They underestimate the intelligence of their people. It is because their standard is low that they are not better sustained. Let them raise their requirements, and they will receive a class of students that men of some educational accomplishments will not be ashamed to associate with; they will see a much better kind of material flocking to their doors in greatly increased numbers.

The principal movement to the front at this year's meeting of the college associations, was the adoption of a definite amount of study as a pre-requisite. Heretofore the colleges were their own arbiters, and themselves judged the qualifications of their students. Some of them have had a high standard upon paper, which could be flexed and bent to suit the circumstances. There is one that demands a preliminary knowledge of Latin, and plumes itself accordingly. And yet, men who never studied Latin for a day have passed the Latin requirements. The college conducted its own examinations, and marked the papers itself. What is needed is a standard that cannot be thus manipulated. In the State of New York no professional school passes upon the qualifications of its applicants. All students must get a certificate from the State Board of Regents before they can be received. This may be obtained by filing the proper evidences of attendance for a sufficient term at an institution recognized as maintaining the proper standard, or the "Regent's examination" of the State may be taken, each study which is thus passed counting a definite number in a total that is demanded.

It is a modification of this that has been adopted by the National Association of Dental Faculties. A reference to the report of the meeting published in this number, will clearly show how much more perfect than the present system this can be made. The certificate of attendance in a reputable school is to be the basis upon which everything is considered. Each full term in each study, the examinations being successfully passed, counts a definite number. For instance, fourteen preliminary counts may be obtained by attendance upon a common school, as follows, each term counting one:

2 Terms Orthography;
2 Terms Writing,
2 Terms Geography,
2 Terms Reading,
2 Terms Arithmetic,
2 Terms Grammar,
2 Terms United States History.

These foot up fourteen terms, but may all be acquired in two terms of a graded school. They are pre-academic and essential.

Then there are two or three terms each in algebra, geometry, physiology, literature, ancient and modern languages, with other high school or academic studies, the summing up of all of them amounting to sixty-five terms. These are elective studies. Suppose that the requirement, to commence with, is twenty-four counts. Fourteen of these are the preliminary counts, to be obtained in the common schools, as above. That leaves ten terms that must be made up from academic studies. They can all be obtained in two terms of a high school, as thus: 2 Physiology, 2 Physical Geography, 2 Rhetoric, 2 Natural History, 2 Drawing. Or any other studies may be taken that will show not less than two terms each.

If the standard is thirty-six, it can be thus made up. Fourteen preliminary, or common school, leaving twenty-two counts to be made up from the academical course, and any of the list of studies may be taken to make up a total of twenty-two terms in the aggregate. How simple, and yet how effective. The student has but to present the proper evidence that he has attended, say three full terms, at a recognized academy or high school, and pursued three or four studies, and, having the common school branches, he will be entitled to a twenty-four count certificate. If he is studious and intelligent he can get more, and so his standing will be that which his industry and knowledge will make it.

Such a course will be inflexible and fair to all. It will relieve the deans of the responsibility of fixing the requirements by an examination that may be made a farce, if any will. It will give us a profession that will be respected by all, and it will make us respectable. It will enable us to claim some kinship with learned professions, and it will result, not only in calling into dentistry a better class of men, but in greatly increased prosperity for the colleges.

This is not near as high a standard as that of the State of New York, to which all matriculants of her professional schools, whether of medicine, law, theology, dentistry or pharmacy must attain, and it is not half as difficult to reach, for with us the Regents judge the sources whence the certificates come, and do not permit the colleges to prescribe them, but themselves sit in judgment, and certify them, without which certificate they cannot be accepted by the colleges.

The subject is one that every educator, aye, and every dentist, should carefully think over, for all are interested in the raising of the professional standard. The more respectable the profession becomes, the more respected will be each of its individual members.

A PROPOSED MID-WINTER MEETING.

It was proposed at the late meeting of the National Associations, that the educational bodies should convene at a time different from that of the meeting of the American Dental Association. There are many considerations that would seem to make such a thing desirable. In the first place, the sessions of the educational bodies greatly detract from the interest of the national professional meeting. Some of the best men in dentistry are members of both. The National Association of Faculties meets, and must meet, first. Its members are tired out when the American assembles. They need rest, and so absent themselves from the sessions of the American; their non-attendance is noted, and they are decidedly missed.

Then again, the Faculties Association is never through when the American is called, and there are rival and distracting sessions. There is no zeal or enthusiasm on the part of some of the oldest members of the profession, and their lassitude is reflected upon all. As a consequence, the A. D. A. meetings lack interest, and fail to draw the attention of many. Relieve the American of the embarrassment of the rival meetings, hold it when all can come fresh and enthusiastic to its sessions, and its record may be far different from that of the past few years, especially if some changes in the methods of management are instituted.

It is, then, undoubtedly for the interest of the American Dental Association that it should be relieved of the harassing and perplexing presence of the educational associations.

On the other hand, the latter would be greatly benefited by the change. As it is, the members attend their annual convocation at a time when they have for months been relieved from the cares of the college term. They have been seeking relaxation and rest by courting an entire forgetfulness of students, and lectures, and college environments. They are not in a mood for, nor are they prepared to, discuss educational matters. These are not at that time live questions. If they could meet when the minds of the members are full of school thoughts, when the matters that most perplex them are fresh in memory, when the subjects upon which they most desire advice and counsel are upon the top, with how much greater zest could they enter into the discussions.

Then, too, as Prof. Weeks so justly urges, if we could meet in cities in which colleges are located, we would observe the methods of the different schools, and each might learn something. The visited colleges would be placed upon their mettle, would perfect their curricula, strengthen their faculties and better their methods, that they might have something of interest to exhibit to their visitors. All the active members of the various faculties could be invited, and thus others than the deans would be benefited. We should become better acquainted with each other, and many an ill-founded and unreasonable prejudice would be effaced. We feel better toward those whom we have visited or entertained, and such a meeting would certainly result in greater confidence, and more harmonious working and interchange of courtesies.

If such a meeting was held during the Christmas Holydays, it would afford excellent relaxation just when it is much needed. Some improvement might be discovered by each in time to inaugurate it before the close of the term. There would be abundance of time, for we could take a week if need be, and discuss our matters to a stand-still—fight our friendly battles to a finish. There would be nothing to distract our attention from the business in hand, and we could, while benefiting professionally, cultivate the social amenities of life, something that the best of us sorely need.

The National Technic Association could meet with us, for our ends and aims are identical, and alternate sessions might be held. Or that body, if it was thought best, might become one of a number of sections into which the Faculties Association could be divided. All methods of teaching, and all branches of professional education should be represented. It would seem that such a meeting ought to be fraught with great good to our schools. It need not necessarily take the place of the summer meeting, unless it should be found profitable to all, and desirable from every standpoint. One such meeting would solve that question, and determine whether or not it would be wise to continue them.

The experiment seems worth a trial, and if an invitation for a meeting-place is desired, Buffalo will gladly open wide its doors, and extend a welcoming hand to any college man who will visit her this winter. It will promise the attendance of, and addresses from, some of the most prominent educational men in this and other states, for it would seem very desirable that the opportunity be given to compare our own educational methods and equipments with those of other professions, and representatives from law, medicine and pharmacy might with propriety be invited. We do not wish to urge Buffalo as the place for such a meeting, but simply to offer it, and to say that the University, with its schools of Pedagogy, Medicine, Law, Pharmacy and Veterinary Medicine, will vie with each other in proffering entertainment.

CURRENT NEWS AND EXCERPTS.

MUSEUM OF COMPARATIVE ANATOMY.

Dr. W. C. Barrett, Professor of Comparative Dental Anatomy and Oral Pathology in the Chicago College of Dental Surgery, has lately purchased for that college a very complete series of specimens which he will arrange in its museum and will use to illustrate his lectures. Most of the specimens were obtained from Ward's Natural Science Establishment in this city, though Prof. Barrett has added some obtained by him when in Europe. The following is a partial description of the specimens in the collection:

HUMAN ANATOMY.

- 10 masks of different races of men, from actual casts: colored.
- 1 foetal human skull.
- 1 human skull at birth.
- 1 human skull, 1 month.
- 1 human skull, 6 months.
- 1 human skull, 1 year.
- 1 human skull, edentulous.
- 1 set germs of teeth, mounted.

SYSTEMATIC SERIES OF SKULLS.

CLASS MAMMALIA.

Order Monotremata.

(No calcified teeth. Two horny plates on each side of each jaw.)

Orinthorynchus anatinus,	Duck-billed Platypus.

Order Marsupialia.

(Peculiar in having but one (when any) deciduous tooth on each side of each jaw. Dentition diphyodont and heterodont.)

Didelphys virginianus,	Opossum.
Sarcophilus ursinus,	Tasmanian Devil.
Phascolarctos cinereus,	Koala.
Macropus giganteus,	Kangaroo.
Phalangista vulpina,	Phalanger.
Phascolomys ursinus,	Wombat.

Order Edentata.

(Monophyodont, homodont dentition. Teeth of persistent growth.)

Choloepus hoffmanni,	Sloth.
Dasypus sexcinctus,	Armadillo.

Order Cetacea.

(Monophyodont, homodont dentition.)

Physeter macrocephalus,	Sperm Whale.
Balæna cisarctica,	Right Whale.
Phocæna communis,	Porpoise.

Order Ungulata.

(Diphyodont heterodont dentition.)

***Perissodactyle ungulates*—**	
Equus caballus,	Horse.
Artiodactyle ungulates (non ruminant.)—	
Sus scrofa,	Hog.
Dicotyles torquatus,	Peccary.
Babirusa alfurus,	Babirusa.
(Ruminants.)	
Cervus virginianus	Deer.
Bison Americanus,	Buffalo.
Ovis aries,	Sheep.
Camelus arabicus,	Camel.
Bos taurus,	Cow.

Order Proboscidea.

(Diphyodont heterodont dentition.)

Elephas indicus (young),	Elephant.
Elephas indicus,	Molar tooth.
Elephas indicus,	Horizontal section.
Elephas indicus,	Perpendicular section.

Order Hyracoidea.

(Diphyodont heterodont dentition.)

Hyrax capensis,	Hyrax.

Order Rodentia.

(Diphyodont heterodont dentition.)

Arctomys monax,	Woodchuck.
Fiber zibethicus,	Muskrat.
Castor canadensis,	Beaver.
Erethzion dorsatum,	Canada Porcupine.
Hydrochærus capybara,	Capybara.
Cœlogenys paca,	Paca.
Dasyprocta agouti,	Agonti.
Lepus aquaticus,	Rabbit
Sciurus carolinensis,	Squirrel.

Order Cheiroptera.

(Diphyodont heterodont dentition.)

Pteropus melanopagon,	Fruit Bat.

Order Insectivora.

(Diphyodont heterodont dentition.)

Erinaceus europæns,	Hedgehog.
Talpa europæa,	Mole.

Order Carnivora.

(Diphyodont heterodont dentition.)

Terrestrial Carnivora. Cynoidea—	
Vulpes fulvus,	Fox.
Canis latrans,	Coyote.
Canis dingo,	Dingo.
Canis familiaris,	Pug Dog.
Æluroidea—	
Felis leo,	Lion.
Lynx rufus,	Wild Cat.
Crocuta maculata,	Hyaena.
Arctoidea—	
Lutra canadensis,	Otter.
Mustela canadensis,	Fisher.
Mephitis mephitica,	Skunk.
Ursus Americanus,	Black Bear.
Procyon lotor,	Raccoon.
Taxidea Americana,	Badger.
Aquatic Carnivora. Otaridæ.	
Zalophus Californianus,	Sea Lion.
Phocidæ—	
Phoca vitulina,	Harbor Seal.
Trichechidæ—	
Odobænus rosmarus,	Walrus.

Order Primates.

(Diphyodont heterodont dentition.)

Simiidæ. (Anthropoid Apes.)—	
Gorilla savagei, female,	Gorilla.
Simia satyrus, male,	Orang.
Cercopithecidae. (Old World Monkeys.)—	
Cercopithecus sp., young,	
Macacus rhesus,	Rhesus.
Cynocephalus porcarius,	Baboon.
Cebidæ. (New World Monkeys.)	
Mycetes palliatus,	Howler.
Hapale leucocephala,	Marmoset.
Lemridæe—	
Propithecus verreauxii,	Lemus.

CLASSES REPTILIA AND BATRACHIA.

Python molurus,	Python.
Crotalus durissus,	Rattlesnake.
Alligator lucius,	Alligator.
Thalassochelys caouna,	Loggerhead Turtle.
Rana mugiens,	Frog.

CLASS PISCES.

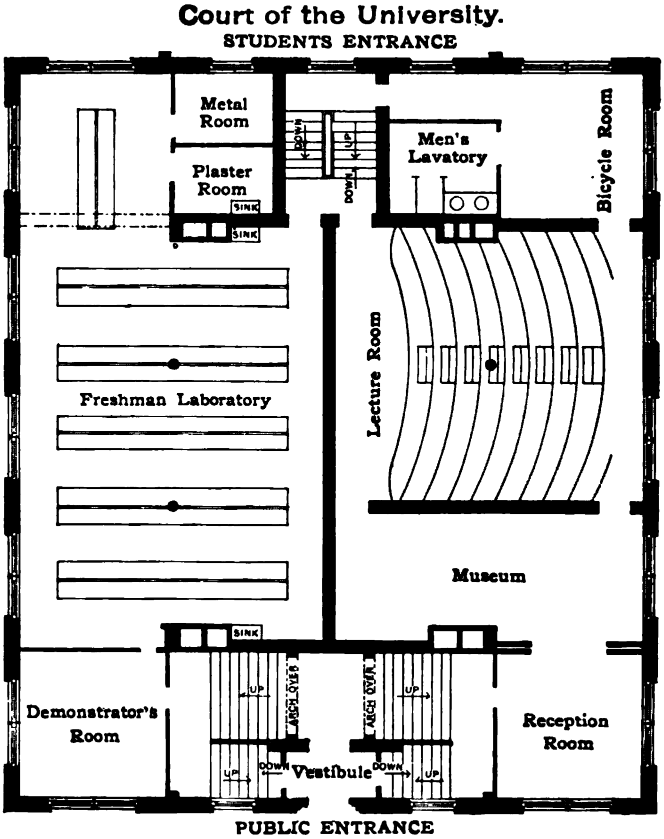
Polyodon spatula,	Paddle Fish.
Cestracion phillipsi,	Pt. Jackson Shark.
Lamna cornubica,	Porbeagle.
Pristis cuspidotus,	Saw Fish.
Squalus sp.,	Shark.
Xiphius gladius,	Sword Fish.
Lepidosteus osseus,	Gar Pike.
Anorrhichas lupus,	Wolf Fish.
Scarus sp.,	

—*Odontographic Journal.*

THE BUFFALO DENTAL SCHOOL.

The readers of this journal will bear witness that very little of the affairs of the Dental Department of the University of Buffalo has been obtruded upon them. But the opening of the fifth term marks such an era in its history, in the moving into a new and elegant college building, that we are constrained to give it the notice to which an affair of its professional importance is entitled. The new edifice was not planned until May last, and work was not begun until June was well started. There has been busy hustling to get it done, but the deed was accomplished. All the contracts were let with the most stringent provisions as to time, and with heavy forfeitures for each day of delay in completing the work. The general contractors put an army of men at work at the outset, and have kept them busily employed to the end, with the result that the building is done at the time contracted, and notwithstanding the shortness of the time, it is thoroughly constructed.

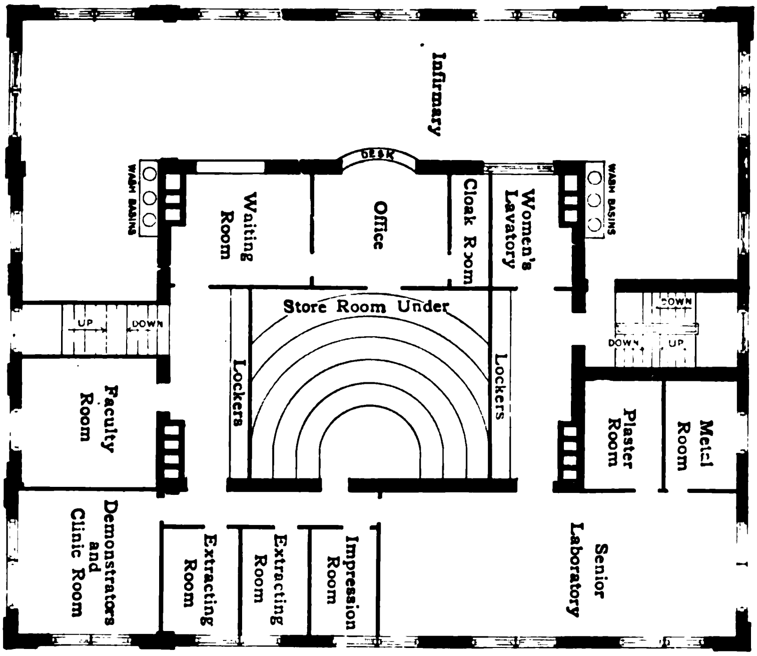
The edifice is erected upon the University grounds, fronting on Goodrich Street, and it is unique in many particulars. It is confidently believed that there is no college building in existence better adapted to dental teaching, than is this. It is built of stone, pressed brick, terra-cotta and iron, and is of handsome proportions. There are a number of points believed to be of special excellence. In the first place, the heating and ventilating are as perfect as money can make them. The air is all heated in the basement, by a system of indirect radiation, and then is driven by an engine into every room in the building, entering at the top and forcing all vitiated air out at the bottom. Natural gas alone is burned for fuel.



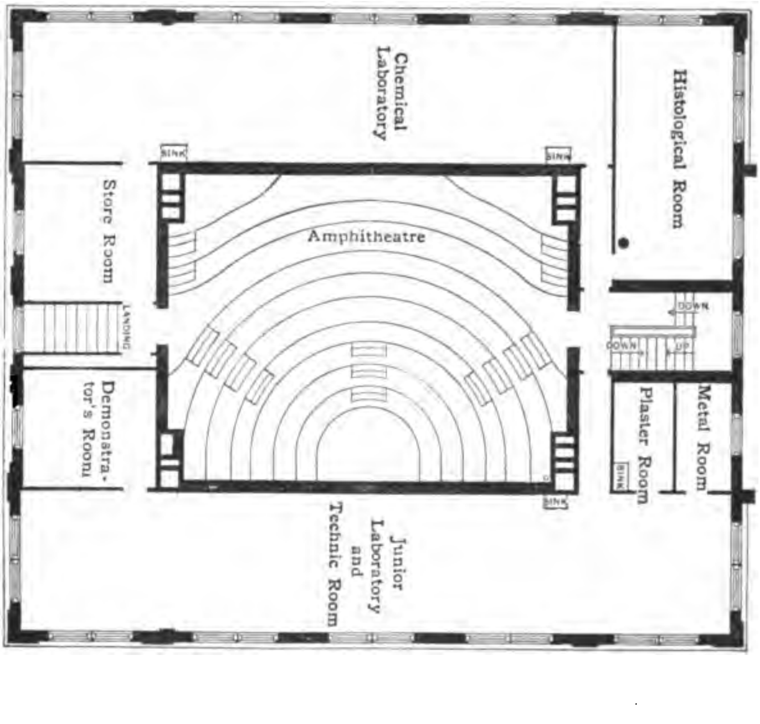
Ground Floor Plan.
(GOODRICH STREET)

All the windows, save the plate glass ones in the front, are of ground glass, thus obviating any shadows, and giving an equal and diffused light. Incidentally, it precludes the students from looking out, or outsiders from looking in, thus preventing distracting sights from attracting the attention of the classes.

The main amphitheatre is in the center of the building, all the other rooms above the



First Floor Plan



Second Floor Plan.

first floor being grouped around it. This entirely prevents the entrance of any sounds from without, while it so separates the rooms from each other that there can be no interference. It occupies what would otherwise be the worst illuminated part of the building, it being lighted by a large sky-light in the roof. In the construction of any edifice that requires a great deal of light, it has been usual to build it long and narrow, that it may be illuminated perfectly in every part. But this method is expensive and inconvenient. Another mode, when a nearly square building is a necessity, is to place a court in the center, from which light and air are obtained. The Buffalo structure substitutes the amphitheatre for the court, and lights from the outside and from the roof, obtaining a perfect air supply by the system of forced ventilation.

There are separate entrances for the students, and for the public and the professors. This gives perfect access to all parts of the building without crowding or annoyance. Everything that can conduce to the comfort and convenience of students and teachers has been secured, as far as is possible.

There have been considerable changes in the faculty. This became a necessity, for the old University building had become so crowded that there was not room sufficient for the students. The classes in anatomy, chemistry, etc., had become so large that they could not well be taught together. Henceforth all the teaching in the Dental Department will be within its own walls, if we except practical anatomy, biology, some studies in histology, with the hospital work of the Seniors. In addition to the dental teachers of last term, G. A. Himmelsbach, M. D., formerly instructor in General Anatomy, has been elected Professor of that branch. A. L. Benedict, A. M., M. D., has been made Professor of Physiology and Dr. F. J. Gieser has been advanced to the Professorship of Chemistry.

Dr. R. H. Hofheinz, of Rochester, has been elected Professor of Operative Dentistry, Dr. F. E. Howard assuming a half active, half emeritus position. He had for some time been anxious to retire from the weightier responsibility of the position, as his strength was not sufficient for that and his large private practice. Dr. F. T. Van Woert, of Brooklyn, will give more time than formerly to his chair, and will add to it lectures on Electricity and Electro-Therapeutics. The other teachers remain about the same.

That a clear idea of the construction of the new building may be obtained, there is appended the floor plans, which do not include the basement in which is situated the boilers, engine, and heating and ventilating machinery.

THE TACOMA COLLEGE OF DENTISTRY.

Some time since Dr. M. W. Graff, of Tacoma, published an article in which he dedounced the "Tacoma College of Dentistry" as an institution in every way a discredit to the profession. He stated that it was started originally by a small dental supply company with two objects in view: first, to graduate themselves, and second, to create a market for their goods. He said that neither the president, secretary nor treasurer, though teaching all the branches of dentistry, had ever taken a course in a single branch, nor was there a degree of any sort possessed by any member of the Faculty. The Dean, he charged, was an advertising man, with his name hung up in the street cars, etc.

This was over the signature of Dr. Graff, under the date of April 13th last. Another communication over the same name, under the date of June 26, contains a complete retraction and apology for the first. He says that he must do this in justice to the institution whose students have been accepted by a college that is a member of the National Association of Dental Faculties.

All this is rather queer. If he knowingly misrepresented the school, he should be punished. If he branded it as irregular without definite knowledge, he is unworthy credence, even now when he makes his retraction. We have no personal knowledge of the Tacoma College of Dentistry, but we do know that it is not acknowledged by the National Association of Dental Faculties. If any tickets from that institution have been honored by any recognized college, we demand to know its name, that it may be properly dealt with. We have understood that a number of students holding its session tickets applied to one of the colleges of the Association, and were admitted——to the Freshman Class, the same as if they had never attended anywhere. We challenge the truth of the assertion that its students have been given advanced standing anywhere, because of such attendance.

COLLEGE COMMENCEMENTS.

The number of matriculates and graduates of the several colleges is as follows :

Philadelphia Dental College,	Graduates,	116	Attendance,	400
Pennsylvania College of Dental Surgery,	"	96	"	319
Ohio College of Dental Surgery,	"	47	"	210
Kansas City Dental College,	"	47	"	135
University of Iowa, Dental Department,	"	33	"	212
Baltimore College of Dental Surgery,	"	44	"	207
Indiana Dental College,	"	43	"	157
Cleveland University of Medicine and Surgery,	"	6	"	23
Western Reserve University, Dental Department,	"	7	"	53
Vanderbilt University, Dental Department,	"	29	"	150
Birmingham Dental College,	"	6	"	36
University of Maryland, Dental Department,	"	42	"	202
Meharry Medical College, Dental Department,	"	3	"	18
Missouri Dental College,	"	29	"	96
Chicago College of Dental Surgery,	"	107	"	436
Western Dental College,	"	46	"	202
Cincinnati College of Dental Surgery,	"	8	"	33
Columbian University, Dental Department,	"	14	"	56
Atlanta Dental College,	"	40	"	200
University of Buffalo, Dental Department,	"	36	"	187
New York College of Dentistry,	"	74	"	309
National University, Dental Department,	"	6	"	47
University College of Medicine, Dental Department,	"	13	"	36
University of Pennsylvania, Dental Department,	"	74	"	310
Royal College of Dental Surgeons,	"	28	"	161
University of California, Dental Department,	"	52	"	195
University of Tennessee, Dental Department,	"	11	"	50
Northwestern University Dental School, American College of Dental Surgery,	"	149	"	543
Louisville College of Dentistry,	"	33	"	141
Boston Dental College,	"	37	"	189
Detroit College of Medicine, Dental Department,	"	19	"	70
Northwestern College of Dental Surgery,	"	3	"	10
Harvard University, Dental Department,	"	21	"	103
Michigan University, Dental Department,	"	60	"	189
University of Minnesota, Dental Department,	"	14	"	84
Southern Medical College, Dental Department,	"	5	"	49
University of Denver, Dental Department,	"	8	"	28
Dental Department Marion Sims College of Medicine,	"	3	"	31
New York Dental School,	"	3	"	16
Ohio Medical University, Department of Dentistry,	"	13	"	62
Dental Department University of Omaha,	"	3	"	31
Tennessee Medical College, Department of Dentistry,	"	2	"	18
Milwaukee Medical College and School of Dentistry,	"	6	"	60
Tacoma College of Dental Surgery,	"	3	"	25
Howard University, Dental Department,	"	3	"	12
Columbian Dental College, Chicago,	"	63	"	25
Baltimore Medical College, Dental Department,	"	30	"	3
Total,		1,446		6,013

DENTAL COLLEGES.

The following are the most complete statistics obtainable concerning the dental colleges of America:

Number of colleges in active operation,	46
Organized during the past year,	3
Unacknowledged corporations conferring the dental degree,	3
Total,	52

Members National Association Dental Faculties,	39
College applications pending,	4
Colleges, not members, announcing that they will conform to the Faculties Association regulations,	3
Total,	46

Colleges organized during the year—
  Dental Department Western University of Pennsylvania, Pittsburgh.
  International Dental College, Chicago.
  Colorado School of Dental Surgery, Denver.

Corporations conferring the dental degree—
  German-American Dental College, Chicago.
  Wisconsin College of Dentistry, Milwaukee.
  Kansas City College of Dental Surgery, Kansas City.

Colleges whose applications are pending—
  Baltimore Medical College Dental Department, Baltimore.
  Howard University Dental Department, Washington.
  Columbian Dental College, Chicago.
  Tacoma College of Dental Surgery, Tacoma.

BUFFALO PERSONALS.

Several changes have been made in the teaching faculty at Buffalo. Dr. F. J. Gieser has been made professor of chemistry and metallurgy, and is now engaged at the University of Michigan in perfecting himself for the coming winter's work.

Dr. G. A. Himmelsbach, whose "quiz" has been a feature of the school since its inception, has been made professor of general anatomy. Always a busy man, he has seen his way clear to this larger field of work,—one to which he will be welcomed as in his quiz, with clapping of hands, stamping of feet, cheers and dust. Work is contagious; Dr. Himmelsbach has it and the student, no matter how slow in "coming down," is bound to become affected.

Dr. R. H. Hofheinz, of Rochester, becomes professor of operative dentistry, vice Dr. Howard, who is now to all intents and purposes "Emeritus." Dr. Howard has long desired to escape the work and responsibility of this particular chair, and would have been permitted to do so earlier if a satisfactory successor had been available. This worthy finally presented in the person of Dr. Hofheinz, a dentist in full practice, theoretically informed, skillful in operative procedures to a marvelous degree, traveled at home and abroad, and withal a man easily approachable by the student with interest enough in his studies to want to know. Dr. Howard retains his place on the governing board, but will fill Dr. Hofheinz's hour in emergencies, whether from illness or other cause. This arrangement guarantees students, not only their full compliment of lectures and personal attention and instruction in the infirmary, but makes the service continuous throughout the term.

Dr. Woods Hutchinson, who delivered a most fascinating course of lectures on that most fascinating subject, "Comparative Pathology," now signs himself as of the University of Buffalo. The question uppermost in the minds of the students and practitioners last winter, "Will he come?" has been answered in the affirmative, and this distinguished doctor, who charms with the importance of his facts, the mass and the dress in which he presents them, will be heard again and again even under more favorable auspices than those of March last.—*Odontographic Journal.*

JOURNALISTIC CHANGES.

"Items of Interest" has been purchased by The Consolidated Dental Manufacturing Company, and will hereafter be published by them. Dr. R. Ottolengui, well-known in professional circles as an accomplished writer, has been secured as editor, and the journal is to start on a new career, which we trust and believe will be one of honor and prosperity. Certainly, an excellent choice has been made of an editor, for not only is Dr. Ottolengui a practiced and graceful writer, but he is independent and fearless, and does not hesitate to call things by their right name. We need such men in dental journalism, and we congratulate Dr. Ottolengui on his preferment, while at the same time we even yet more heartily felicitate the profession upon what it has gained.

The former editor of "Items of Interest," Dr. Welch, after the sale of the journal issued another, having exactly the same external appearance and internal "make up," under the name of "Welch's Monthly." The purchasers of "Items of Interest" claim that the subscription books were copied, and that nothing of the old "Items of Interest," save the name, was transferred to them. They complain that articles contributed to "Items of Interest" are published in "Welch's Monthly," as original. They are very unreasonable. They should know that this is the modern method of "editing"—and not so very modern after all, since it is old with the former "Items of Interest."

CRIMINAL TYPES.—Dr. Penta has studied some of the physical characteristics of more than 4,500 criminals, and finds a marked degeneracy among them. A deficiency in the size or number of the toes is quite frequent, although very rare among ordinary men. A considerable number have prehensile toes, like those of some of the apes, marked by a wide space between the great and second toe. Many have webbed toes, an approximation to the toeless feet of some savage tribes. He found the little toe rudimentary in many cases, showing an approach toward the four-toed animals. The most common was the webbed condition. These observations agree with those of other observers who have found a preponderance of misshapen heads, one-sided faces, deformed jaws and mismated ears, eyes, etc., all of which goes to prove that the habitual criminal is a degenerate type, approaching the lower animals in some particulars.

REMOVAL.—Dr. A. O. Hunt, for so long the Dean of the Dental Department of the University of Iowa, has resigned that position, and accepted that of professor of prosthetic dentistry in the Chicago College of Dental Surgery. Dr. Hunt will retire from practice, at least for the present, and will give his whole time fo the Chicago College, taking entire charge of the Prosthetic Department. He has made a success of the Iowa School, has demonstrated his great ability as a teacher, and the Chicago College is to be congratulated upon his accession to its faculty.

Pyorrhœa.—The following appears in "Notes and Queries" of the *New York Sun*. "If you see it in the *Sun* it is so:"

What is "Rigg's disease"? What causes it? Is it curable or preventable?

A Sufferer.

Answer. Pyorrhœa alveolaris, or alveolar abscess. It is a disease of the teeth and gums, known usually as gum boils, and seems to be curable.

Slaughter of the Innocents.—In France, 94,000 infants were put out to nurse at the expense of the State last year. Of these, 68 per cent. died, as the result of their being compelled to subsist on improper and unnatural food. The mortality among the children of the Polish and Russian Jews in the slums of London, varies from 60 to 80 per cent., owing to unsanitary conditions and improper food. The average mortality among the children of all England is only about 25 per cent. per annum.

For Sale or Exchange.—The editor of this journal has a Harvard Operating Chair, made in Canton, Ohio, and purchased something over a year ago, which he will be glad to exchange on favorable terms for anything on earth except another chair of the same kind. He will not warrant it to be in good order, for that is what it has never been yet, but he will turn over to the purchaser the guarantee that he got, provided security is given that the thing will not be thrown back upon his hands.

Deafness.—It has taken the medical world a great many years to discover that loss of hearing is almost invariably caused by some disease of the throat, or nose, or oral cavity. But very recent researches in these fields have demonstrated this fact beyond question, and it is now admitted by the most advanced medical men that, aside from rupture of the ear-drum, there is scarcely a symptom of defective hearing that is not traceable to the condition of these cavities.

In Australia.—A bill has been introduced in Parliament to provide for the registration of dentists qualified to practice, and for other purposes in connection with the practice of dentistry. Dr. Alfred Burne, of Sydney, known to some of us in this country, has been active in securing this desirable object. A school of dentistry in connection with the Medical School of Sydney has also been projected, and has met with favorable consideration.

Our Future Growth.—The time must come when diseases of the pharyngeal, nasal, aural and oral cavities will be treated together as parts of one whole, because they are so closely connected. This is the line of the advancement of dentistry, and in this direction there is room for all the properly educated dentists that all the colleges can turn out for many years to come.

Memoriam.—The sum of $5,000 has been subscribed for the erection of a memorial statute of the late Wilhelm Mayer, of Copenhagen, the discoverer of adenoid vegetations of the pharynx. Of this sum America gives $1,500, more than that given by any other country.

Deaf-Mutes.—There are 5,000 deaf-mutes in New York State, 1,800 of whom are being educated in the schools, of which the State has seven. The remainder are either too young or have already been graduated. In the United States there are 50,000 deaf-mutes.

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